The PHOTOFACT Servicer

SET 402 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JUNE 15, 1958

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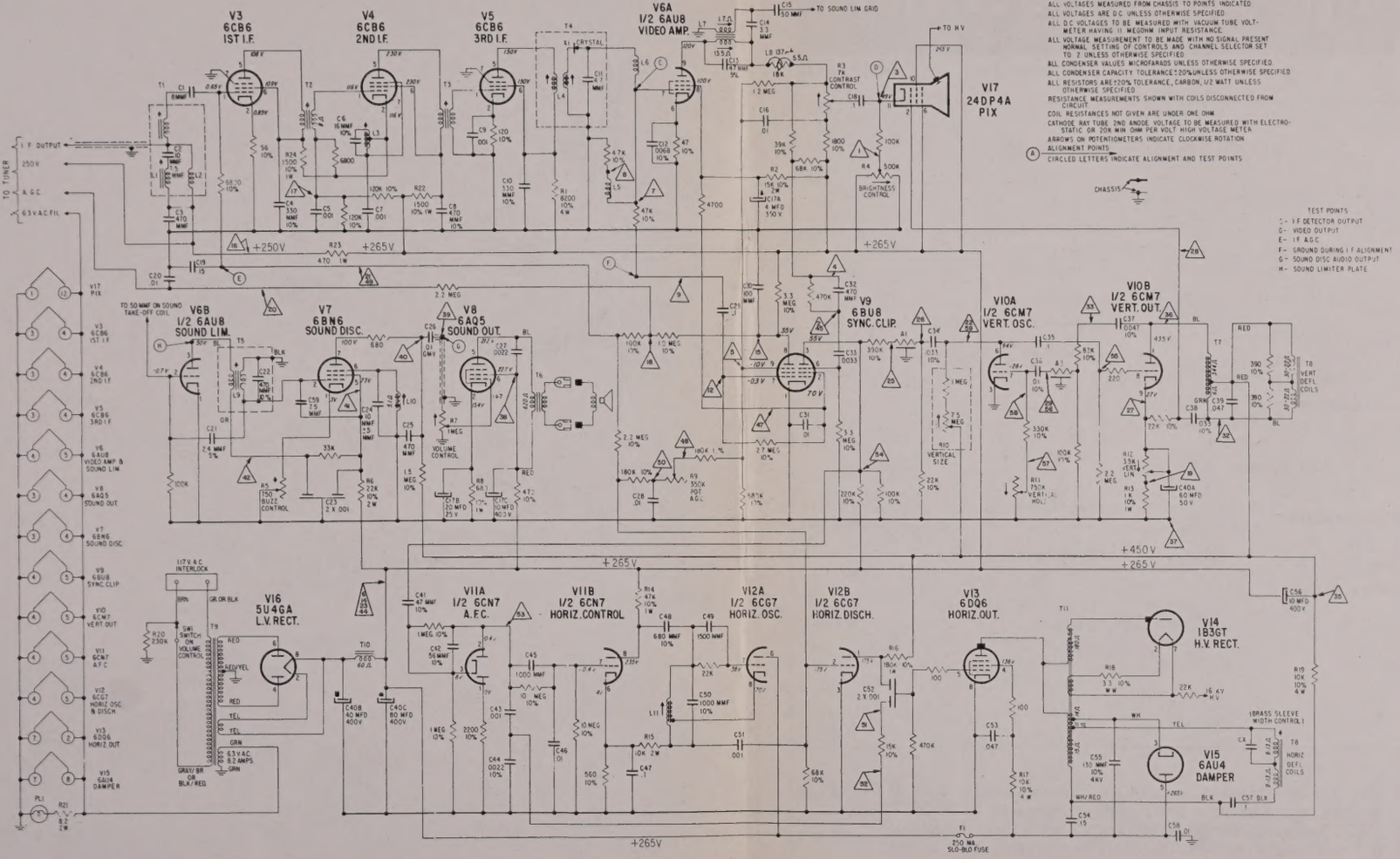
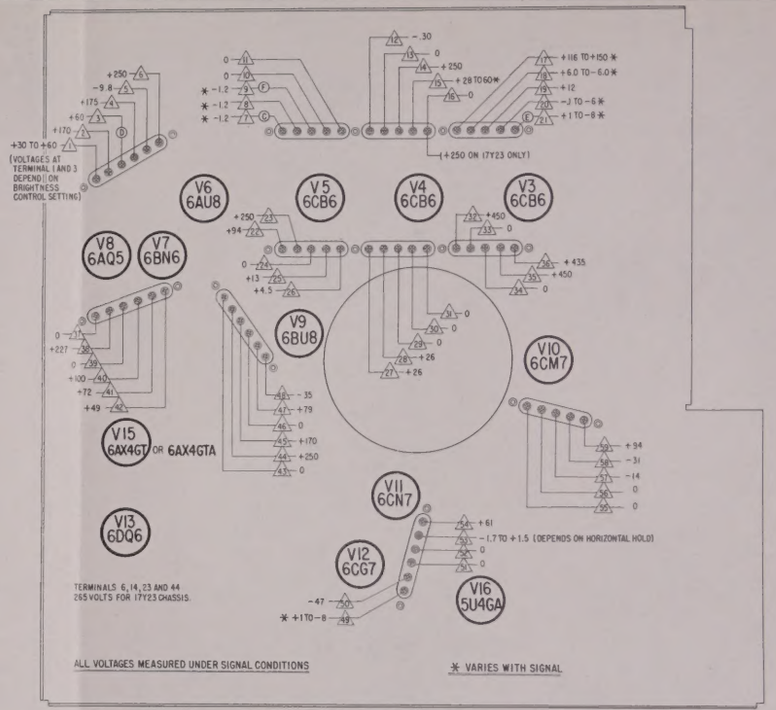
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

ZENITH MODELS Y2636E, EU, R, RU Y2670E, EU, R, RU (CHASSIS 17Y23, U)

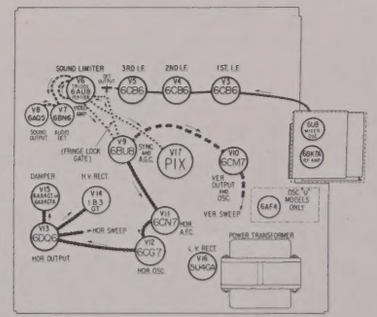


NOTES
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED
ALL D.C. VOLTAGES TO BE MEASURED WITH VACUUM TUBE VOLTMETER HAVING 11 MEGOHM INPUT RESISTANCE.
ALL VOLTAGE MEASUREMENT TO BE MADE WITH NO SIGNAL PRESENT NORMAL SETTING OF CONTROLS AND CHANNEL SELECTOR SET TO 2 UNLESS OTHERWISE SPECIFIED
ALL CONDENSER VALUES MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER CAPACITY TOLERANCE ±20% UNLESS OTHERWISE SPECIFIED
ALL RESISTORS ARE ±20% TOLERANCE, CARBON, 1/2 WATT UNLESS OTHERWISE SPECIFIED
RESISTANCE MEASUREMENTS SHOWN WITH COILS DISCONNECTED FROM CIRCUIT
COIL RESISTANCES NOT GIVEN ARE UNDER ONE OHM
CATHODE RAY TUBE 2ND ANODE VOLTAGE TO BE MEASURED WITH ELECTROSTATIC OR 20K MIN OHM PER VOLT HIGH VOLTAGE METER
ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION
ALIGNMENT POINTS
(A) CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS

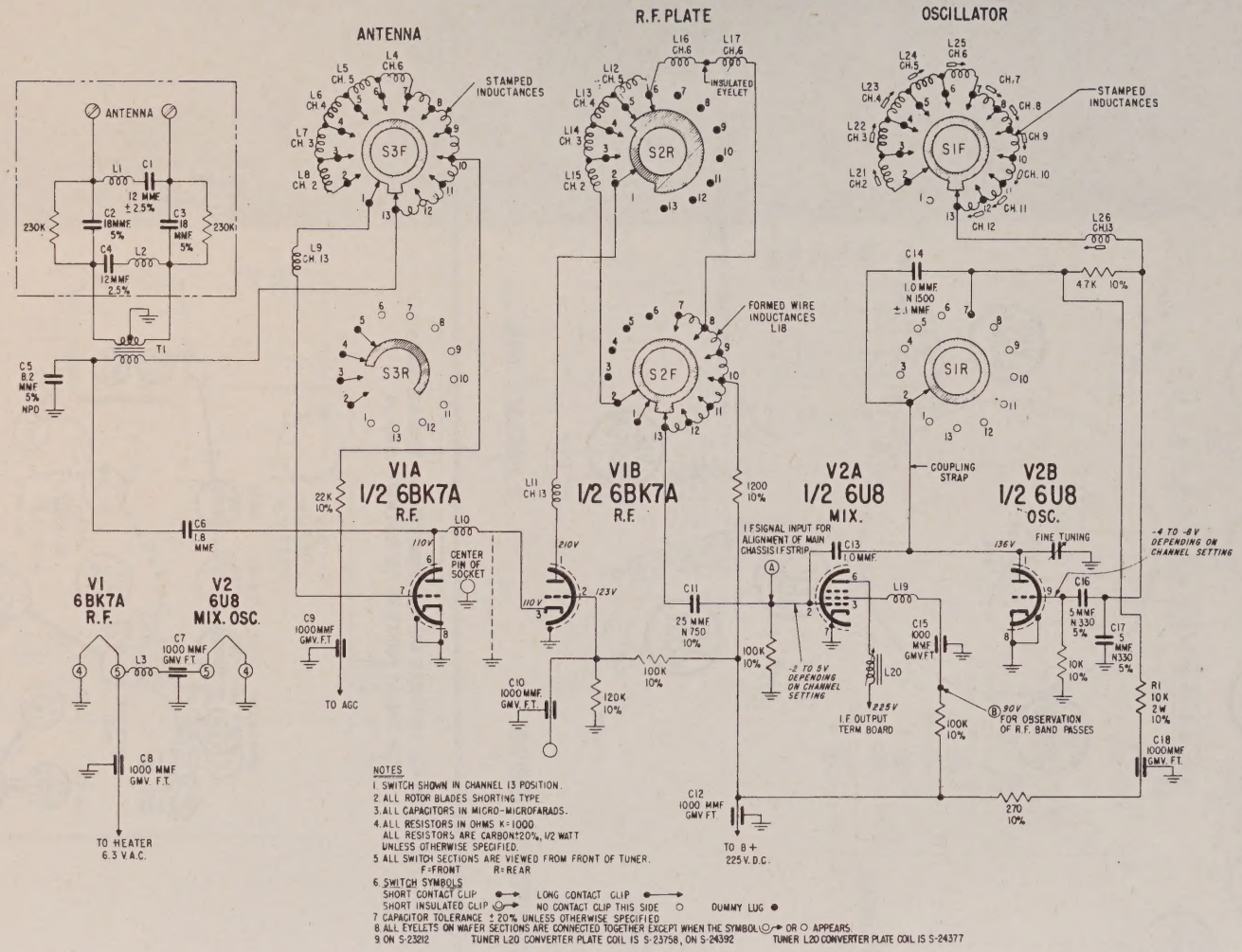
TEST POINTS
C- I.F. DETECTOR OUTPUT
D- VIDEO OUTPUT
E- I.F. A.G.C.
F- GROUND DURING I.F. ALIGNMENT
G- SOUND DISC AUDIO OUTPUT
H- SOUND LIMITER PLATE



REFERENCE TRIANGLES AND TEST POINTS ON THE TERMINAL BOARDS MATCH SIMILAR POINTS ON THE SCHEMATIC DIAGRAM.

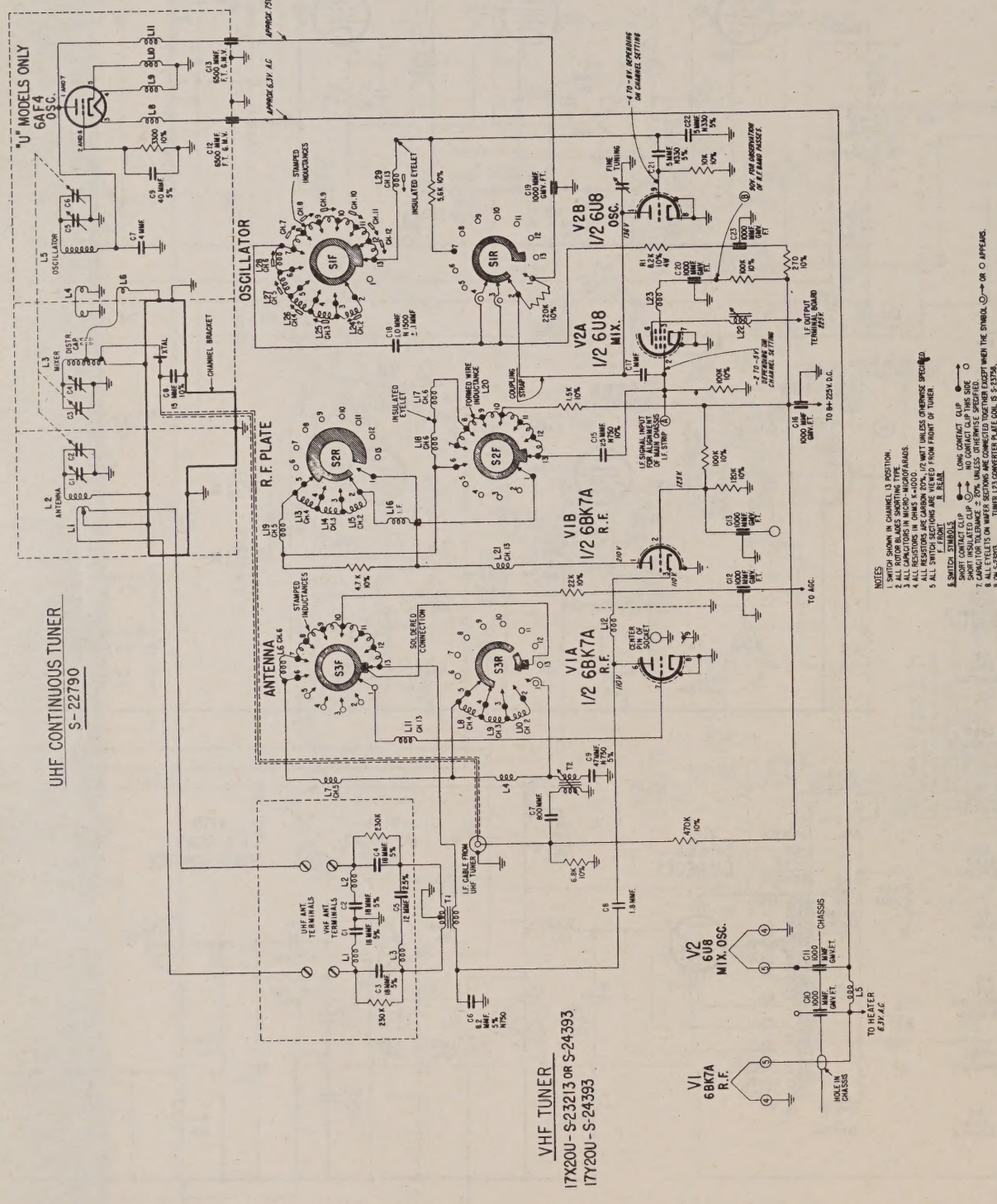


SCHEMATIC DIAGRAM COURTESY ZENITH RADIO CORP.


ANTENNA
R.F. PLATE
OSCILLATOR
STAMPED INDUCTANCES
INSULATED EYELET
FORMED WIRE INDUCTANCES L18
COUPLING STRAP
V1A 1/2 6BK7A R.F.
V1B 1/2 6BK7A R.F.
V2A 1/2 6U8 MIX.
V2B 1/2 6U8 OSC.
V1 6BK7A R.F.
V2 6U8 MIX. OSC.
FINE TUNING
CENTER PIN OF SOCKET
TO AGC
TO HEATER 6.3 V.A.C.
TO B+ 225 V.D.C.
I.F OUTPUT TERM BOARD
I.F SIGNAL INPUT FOR ALIGNMENT OF MAIN CHASSIS I.F STRIP
-2 TO -5V DEPENDING ON CHANNEL SETTING
-4 TO -8V DEPENDING ON CHANNEL SETTING
90V FOR OBSERVATION OF R.F. BAND PASSES
NOTES
1. SWITCH SHOWN IN CHANNEL 13 POSITION.
2. ALL ROTOR BLADES SHORTING TYPE
3. ALL CAPACITORS IN MICRO-MICROFARADS.
4. ALL RESISTORS IN OHMS K=1000 ALL RESISTORS ARE CARBON ±20%, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
5. ALL SWITCH SECTIONS ARE VIEWED FROM FRONT OF TUNER. F=FRONT R=REAR
6. SWITCH SYMBOLS
SHORT CONTACT CLIP
LONG CONTACT CLIP
SHORT INSULATED CLIP
NO CONTACT CLIP THIS SIDE
DUMMY LUG
7. CAPACITOR TOLERANCE ± 20% UNLESS OTHERWISE SPECIFIED
8. ALL EYELETS ON WAFER SECTIONS ARE CONNECTED TOGETHER EXCEPT WHEN THE SYMBOL OR APPEARS.
9. ON S-23212 TUNER L20 CONVERTER PLATE COIL IS S-23758, ON S-24392 TUNER L20 CONVERTER PLATE COIL IS S-24377

12 Position Bandswitch Tuner Used in 17Y Series Receivers

ZENITH CHASSIS 17Y23, U.



Schematic Diagram VHF & UHF Tuners Used in 17Y "U" Models

SCHEMATIC DIAGRAM COURTESY ZENITH RADIO CORP.

SET 402 FOLDER 1

ADMIRAL MODELS
T18A11N, T18A12, T18A13 (Ch. 17F1)

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 6 push-on type knobs from the side.
2. Remove 10 metal screws holding the rear cover. Remove the rear cover.
3. Remove speaker leads.
4. Remove 2 speaker bolts and the speaker.
5. Remove 1 metal screw holding the cabinet grounding strap.
6. Remove 5 cabinet bolts from the bottom.
7. Remove the cabinet.

MODEL T18A11N (Ch. 17F1)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

ADMIRAL MODELS
T18A11N, T18A12, T18A13 (Ch. 17F1)

TRADE NAME	Admiral	MODELS	CHASSIS
		T18A11N, T18A12, T18A13	17F1
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 120 Watts, 1.15 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 25.75MC, Sound IF 21.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound. NOTE: Adjust in sequence from the lowest to the highest channel. If 2 slugs are visible adjust lower slug.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning it is necessary to remove the chassis. (See disassembly instructions.)

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10 or 6 and 2. Readjust the ion trap for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the Ratio Detector secondary (A7) located on bottom of chassis.

FUSE DEVICE

A 10Ω fusible resistor (R85) is used for LV power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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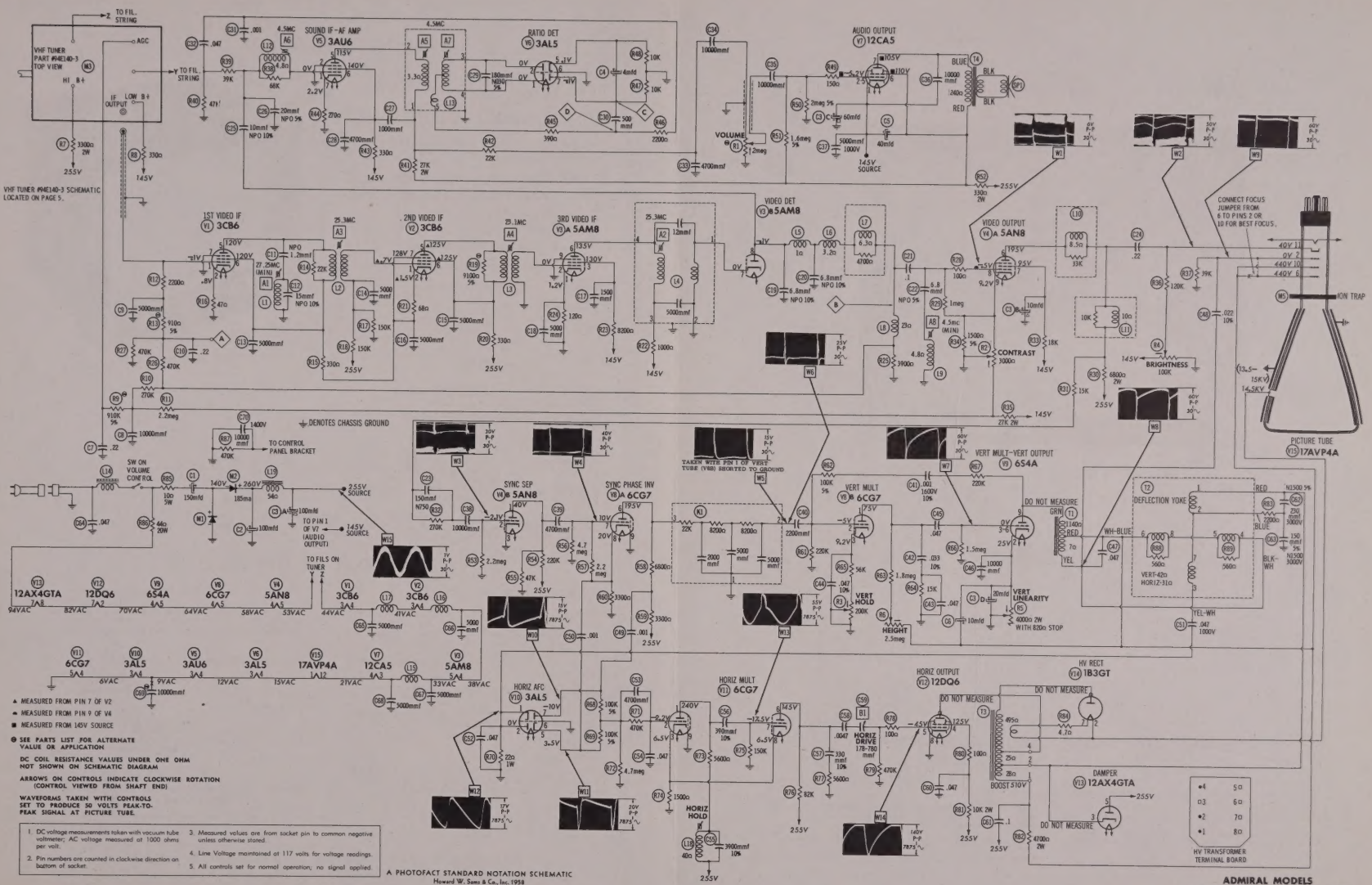
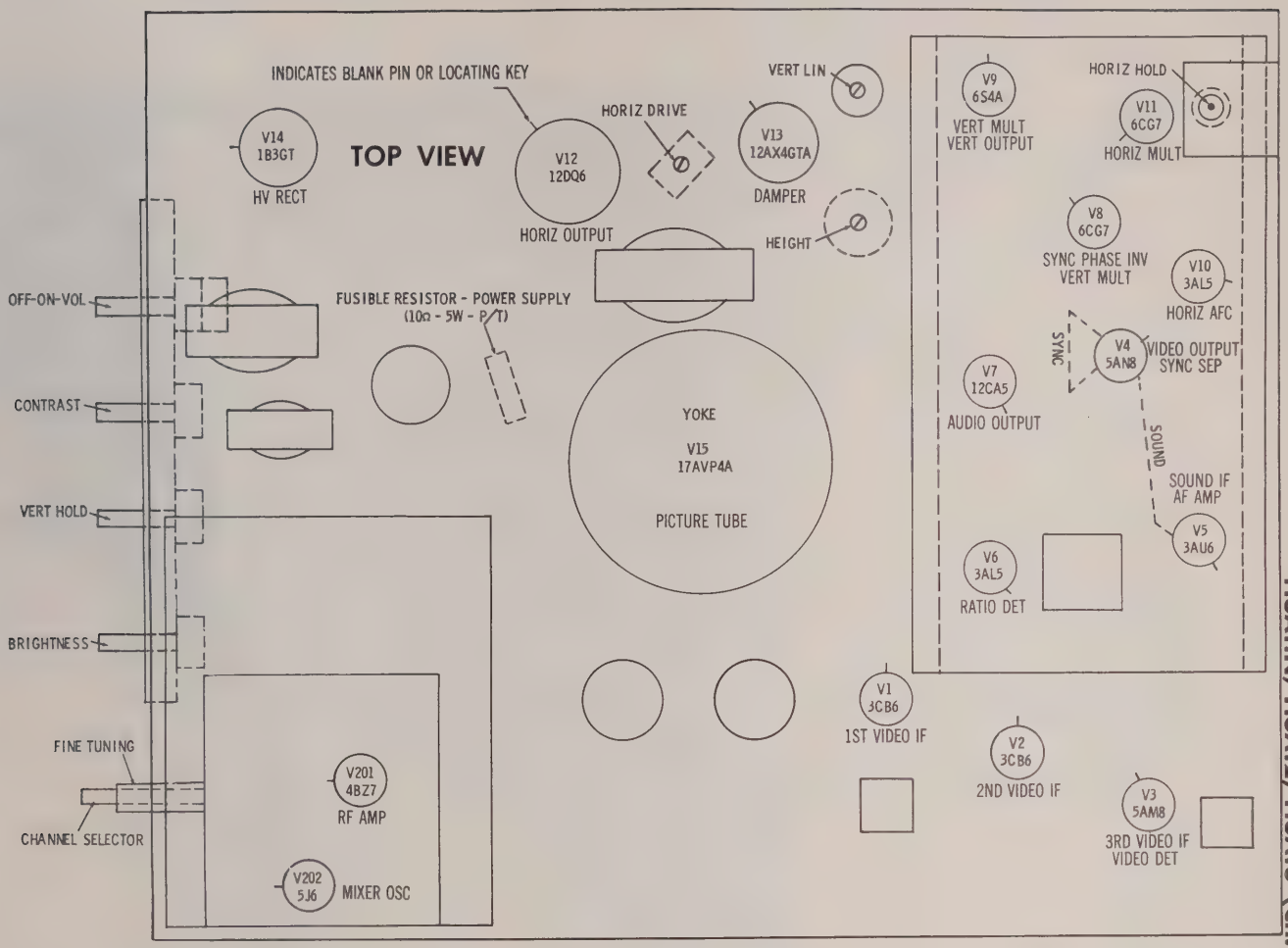
H473

SET 402 FOLDER 1


VHF TUNER PART #94E140-3 TOP VIEW
VHF TUNER #94E140-3 SCHEMATIC LOCATED ON PAGE 5.
SOUND IF-AF AMP V5 3AU6
RATIO DET V6 3AL5
AUDIO OUTPUT V7 12CA5
1ST VIDEO IF V1 3CB6
2ND VIDEO IF V2 3CB6
3RD VIDEO IF V3 5AN8
VIDEO DET V3 5AM8
VIDEO OUTPUT V4 5AN8
SYNC SEP V8 5AN8
SYNC PHASE INV V8 6CG7
VERT MULT V8 6CG7
VERT MULT-VERT OUTPUT V9 6S4A
HORIZ AFC V10 3AL5
HORIZ MULT V11 6CG7
HORIZ OUTPUT V12 12DQ6
HV RECT V14 1B3GT
DAMPER V13 12AX4GTA
PICTURE TUBE V15 17AVP4A
ION TRAP
CONTRAST
BRIGHTNESS
VOLUME
VERT LINEARITY
VERT HOLD
HORIZ HOLD
HORIZ DRIVE
HEIGHT
DEFLECTION YOKE
CONNECT FOCUS JUMPER FROM 6 TO PINS 2 OR 10 FOR BEST FOCUS.
DO NOT MEASURE
DENOTES CHASSIS GROUND
TO CONTROL PANEL BRACKET
SW ON VOLUME CONTROL
TO FIL. STRING
AGC
HI B+
IF OUTPUT
LOW B+
145V SOURCE
TO PIN 1 OF V7 (AUDIO OUTPUT)
TO FILS ON TUNER
TAKEN WITH PIN 1 OF VERT TUBE (V8B) SHORTED TO GROUND
BOOST 510V
HV TRANSFORMER TERMINAL BOARD
12AX4GTA 12DQ6 6S4A 6CG7 5AN8 3CB6 3CB6 5AM8
94VAC 82VAC 70VAC 64VAC 58VAC 53VAC 44VAC 41VAC
6CG7 3AL5 3AU6 3AL5 17AVP4A 12CA5 5AM8
6VAC 9VAC 12VAC 15VAC 21VAC 33VAC 38VAC
▲ MEASURED FROM PIN 7 OF V2
▬ MEASURED FROM PIN 9 OF V4
■ MEASURED FROM 145V SOURCE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
ADMIRAL MODELS
T18A11N, T18A12, T18A13 (Ch. 17F1)

TUBE PLACEMENT CHART



ADMIRAL MODELS
T18A11N, T18A12, T18A13 (Ch. 17F1)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

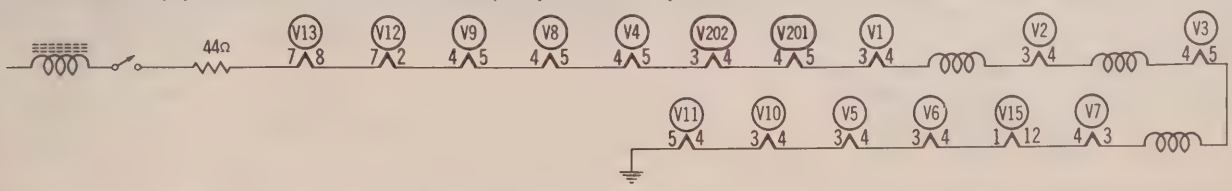
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (R85), Rectifier (M1, M2)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14, V15
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, M1, M2
Vert. off freq. V8, V9
Horiz. off freq. V11

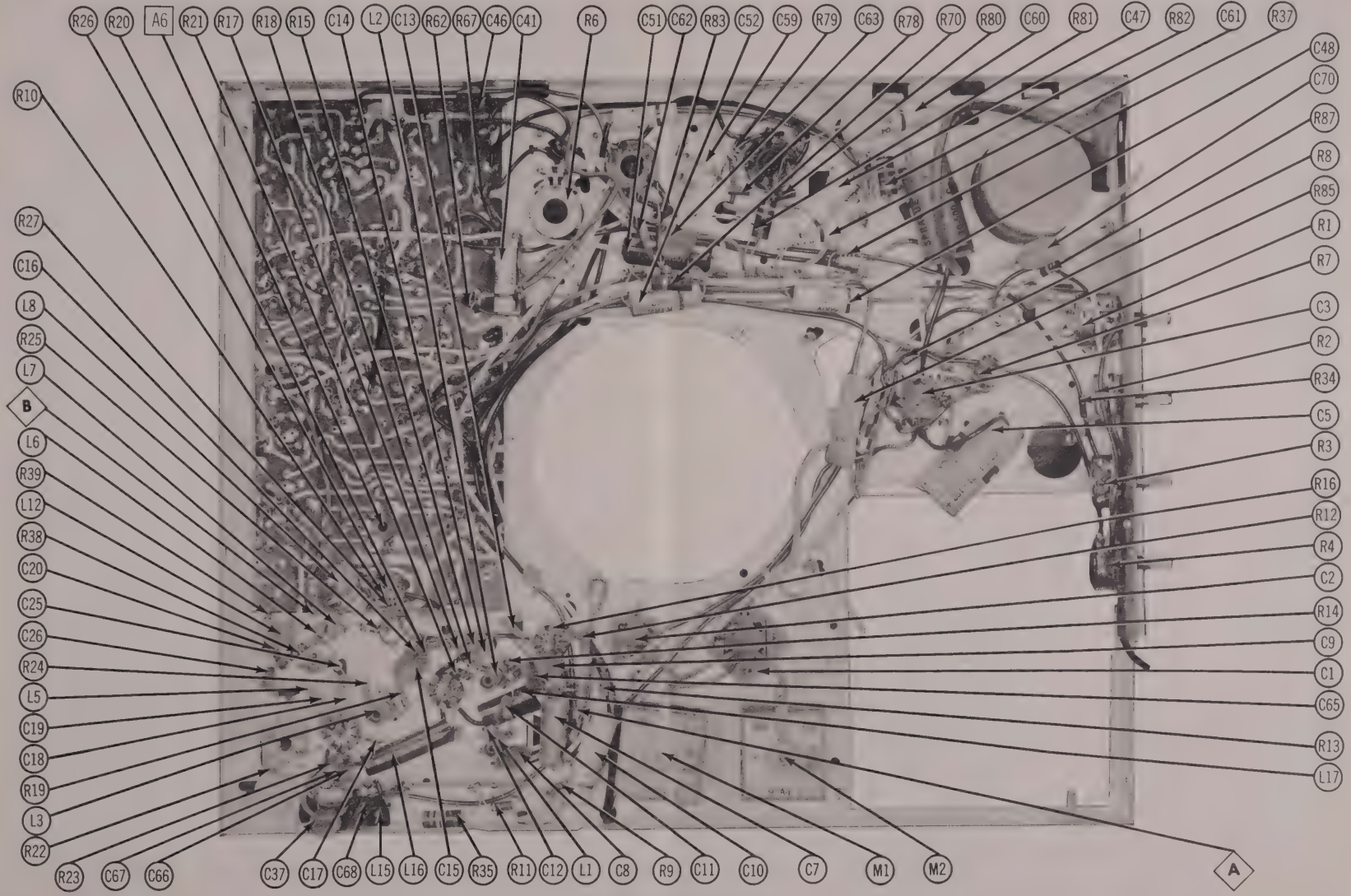
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V7
No pic, no sound, has snow V201, V202, V1, V7
No pic, has sound, has raster V4, V15, V7
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4, V8
No horiz. sync V4, V8, V10
No vert. or horiz. sync V4, V8

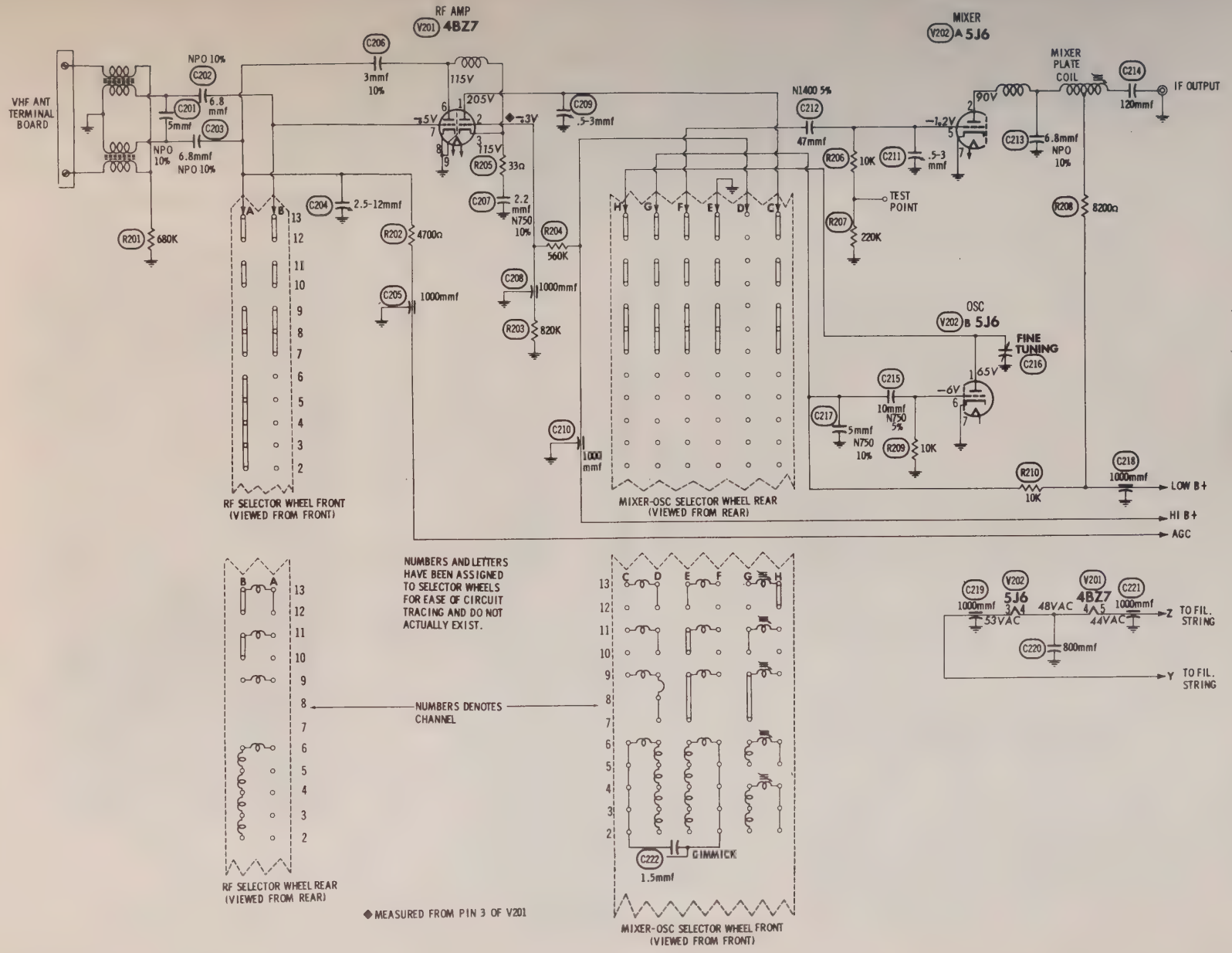
This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 1



CHASSIS BOTTOM VIEW



PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #94E140-3

ADMIRAL MODELS
T18A11N, T18A12, T18A13 (Ch. 17F1)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	4BZ7	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5J6	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	5		65D10-108	NPO-DI 5		C10V5C	ZT-555		NPO 10%
C202	6.8		65D10-26	NPO-DI 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	NPO 10%
C203	6.8		65D10-26	NPO-DI 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	NPO 10%
C204	2.5-12		66A38-5						
C205	1000		65B26-5	EF-001	MFT-1000			503C-D1	
C206	3		65B28-030				ZT-553		10%
C207	2.2		65D10-27						N750 10%
C208	1000		65B26-6	EF-001	MFT-1000			503C-D1	
C209	.5-3		66A38-6		829-3		CT565A		
C210	1000		65B26-5	EF-001	MFT-1000			503C-D1	
C211	.5-3		66A38-6		829-3		CT565A		
C212	47		65D10-73						N1400 5%
C213	6.8		65D10-26	NPO-DI 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	NPO 10%
C214	120		65D10-90	BPD-00012	DD-121	L10T12	UC-5312	5GA-T12	
C215	10		65D10-50	NPO-DI 10	DTN-10			5TCU-Q1	N750 5%
C216									
C217	5		65D10-22		DTN-5	C10V5U	NT-555	5TCUB-V5	N750 10%
C218	1000		65B26-5	EF-001	MFT-1000			503C-D1	
C219	1000		65B26-5	EF-001	MFT-1000			503C-D1	
C220	800		65D10-20	BPD-0008	DD-801	L10T8		5GA-T8	
C221	1000		65B26-5	EF-001	MFT-1000			503C-D1	
C222	1.5		65B28-015	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R201	680K			
R202	4700Ω			
R203	820K			
R204	560K			
R205	33Ω			

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R206	10K			
R207	220K			
R208	8200Ω			
R209	10K			
R210	10K			

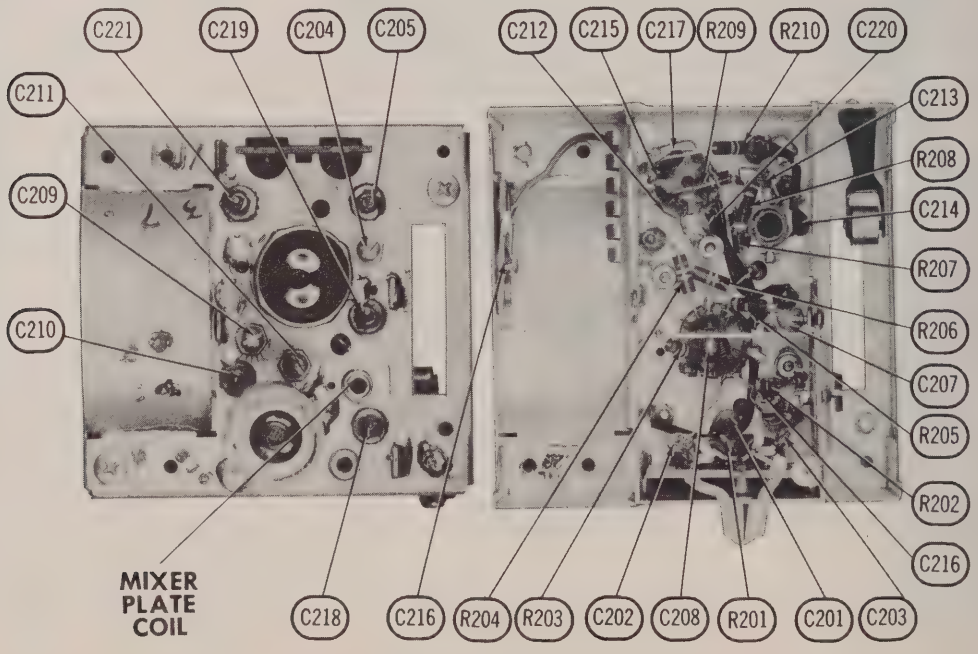
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Turn the set on and allow 15 to 20 minutes warm-up period.
Set channel selector to the lowest channel operating in the area.
Set the fine tuning to the center of its range.
Set other control for normal picture and sound.
Using a 1/8" non-metallic alignment tool, carefully adjust the oscillator slug for best picture and sound. (NOTE: This is not necessarily the point of loudest sound.) If two slugs are visible at the front of the tuner, adjust the lower slug. Repeat this procedure for the remaining stations, adjusting them in order of the channel number from the lowest to the highest.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



RF TUNER

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Disconnect the antenna leads and connect a short across the antenna terminals.
Set the Contrast control fully clockwise.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	Not used	27.25MC (Unmod)	Any non-interfering channel	USE VTVM. DC probe to point (B) Common to chassis. (Across Video Det. Load).	A1	Adjust for MINIMUM deflection. Use lowest DC scale on VTVM.
2.	"	"	"	25.3MC	"	"	A2, A3	Use only enough generator output to provide a usable indication on VTVM. Use lowest DC scale on VTVM. Adjust for maximum deflection.
3.	"	"	"	23.1MC	"	"	A4 & Mixer Plate Coil	Use only enough generator output to provide a usable indication on VTVM. Use lowest DC scale on VTVM. Adjust for maximum deflection. Repeat step 1.
4.	"	"	24.3MC (10MC Swp)	21.25MC 24.3MC 25.75MC 27.25MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response similar to Fig. 1 with markers as indicated. If necessary, re-touch A2 thru A4 and Mixer Plate Coil for desired response.

SOUND IF ALIGNMENT

Leave the jumper across the antenna terminals as in "Video IF Alignment".
Set the Contrast fully counter clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01mfd	High side to pin 7 (cathode) of 5AM8 (V3). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A5, A6	Use lowest DC scale on VTVM. Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (D). Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust A8 for MINIMUM 4.5MC beat interference in the picture.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

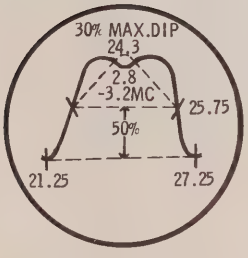


FIG. 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3CB6	
V2	2nd Video IF Amp.	3CB6	
V3	3rd Video IF Amp. - Video Det.	5AM8	
V4	Video Output-Sync Sep.	5AN8	
V5	Sound IF Amp	3AU6	
V6	Ratio Det	3AL5	
V7	Audio Output	12CA5	
V8	Sync Phase Inv.-Vert. Mult	6CG7	
V9	Vert. Mult.-Vert. Output	6S4A	
V10	Horiz. AFC	3AL5	
V11	Horiz. Mult.	6CG7	
V12	Horiz. Output	12DQ6	
V13	Damper	12AX4GTA	
V14	HV Rect	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	ADMIRAL PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	
V15	17AVP4A	17AVP4A/ 17ATP4A ①	17AVP4A-A/ 17ATP4-A ②	17ATP4A/ 17AVP4A ③	① "ALuminized" ② "Silversma" ③ "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP.	RATING VOLT	ADMIRAL PART No	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	67DI5-199	AFH-31-75	XA0266	FP131	TMS-34	S-106	TVL-1430
C2	100	300	67DI5-119	AFHBI-36-06	A0340	FP150	TMS-61	S-190	TVL-1750
C3A	40	300	67DI5-117	AFH4-114-90	D0820	FP404.9 TC55	TMQ-127	Q-154	TVL-6559.5
B	10	150							
C	60	200							
D	20	50							
C4	4	50	67BI7-3	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1402
C5	40	200	67A4-21	PRS250V40	BR4025	TC38	TD-40-250	MT-2540	TVA-1511
C6	10	500	67A4-34	PRS500V10	BR1550	TC32	TD-10-500	MT-5010	TVA-1963

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7	.33	100		P2S8N-33		CUB2P33	GEM-3023	2TM-P33	
C8	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C9	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C10	.33	400		P2S8N-33		CUB4P33	GEM-3023	2TM-P33	
C11	1.3		66D6-119						NPO
C12	15		66D6-90	NPO-S115	TCZ-15	CTA6Q15C		5TCC-Q15	NPO 10%
C13	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C14	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C15	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C16	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C17	1500			BPD-0015	DD-154	BYA10I5	DC515	5HK-D15	
C18	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C19	6.8		66B28-068	NPO-S16.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	NPO 10%
C20	6.8		66B28-068	NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	NPO 10%
C21	.1	300		P2S8N-1	DF-104	CUB2P1	GEM-201	2SE-P10	
C22	6.8		66D6-71						NPO 5%
C23	150		66D6-85	N750-DI 150	TCN-150	CI0T15U		5TCU-T15	N750
C24	.22	600	64B16-28	P4S8N-23		CUB4P22	GEM-4022	4SE-P22	
C25	10		66D6-44	NPO-SI 10	TCZ-10	CTA6Q1C	ZT-541	5TCC-Q1	NPO 10%
C26	20		66D6-51		TCZ-20				NPO 5%
C27	1000		64B16-42	BPD-001	DD-102	BYA6D1	DCS11	5HK-D1	
C28	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C29	180		66D6-59						N030 5%
C30	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C31	.001	400		P4S8N-001	D6-102	CUB4D1	GEM-421	4SE-D10	
C32	.047	200		P2S8N-047	DF-503	CUB2S47	GEM-4147	4SE-S47	
C33	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C34	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C35	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C36	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C37	5000	1000			DD-502	BYA10D5		5GA-D5	
C38	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C39	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C40	2200			1458-0033	1W5D33			1FM-233	
C41	.001	1800					GEM-1621		10%
C42	.033	600	66B16-10						10%
C43	.047	400		P4S8N-047	DF-503	CUB4S47	GEM-4147	4SE-S47	
C44	.047	200		P2S8N-047					10%
C45	.047	600		P6S8N-047	DF-503	BC5S47J	ACE-6147	6SE-S47	
C46	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	
C47	.047	200		P2S8N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C48	.022	600							10%
C49	.001	400		P4S8N-001	D6-102	CUB4D1	GEM-421	4TM-D1	
C50	.001	600		P6S8N-001	D6-102	CUB6D1	GEM-421	6TM-D1	
C51	.047	1000		P1058N-047		CUB1G47	GEM-10147	10TM-S47	
C52	.047	200		P2S8N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C53	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C54	.047	200		P2S8N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C55	3300		66B21-332	1469-0039		1R5D39		MS-339	10%
C56	390		66B21-391	1469-0033	D6-391	1R5T39		MS-339	10%
C57	330		66B21-331	1469-00033	D6-331	5R5T33		MS-333	10%
C58	.0047	600		P6S8N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C59	178-782		66A30-3						
C60	.047	400		P4S8N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C61	.1	600		P6S8N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C62	.430	3000	66DI0-69						N1500 5%
C63	150	3000	66DI0-58						N1500 5%
C64	.047	600		P6S8N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C65	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C66	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C67	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C68	5000			BPD-005	DD-502	BYA10D5	DC535	5HK-D5	
C69	10000			BPD-01	DD-103	BYA10B1	DCS11	5HK-81	①
C70	10000	1400		DAC-47		BYE-1681		20HKD-81	

① Not used in some versions.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	75C2-23	B-78	A47-2meg-Z	Q13-159	U85	Volume - Note 1
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
C	Switch			KS3-1 or KR-1*	SWS-12	76-1	U8-26	
R2	3000Ω	½	75D3-53			Q17-112	U9	Contrast
R3A	100K	½	75D80-39	B-48	A47-100K-S	Q11-139	U43	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R4A	100K	½	75D90-35	B-49	A47-100K-S	Q11-128	TAIL	Brightness
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R5	4000Ω	2(WW)	75B37-3	39-4000-1000				Vert. Lin.with 820Ω stop
R6A	2.5meg	½	75D30-96	BX-84	A47-2meg-S	Q11-140	U59	Height
B	Shaft			Not Req.	FKS1-1/2	Not Req.	Not Req.	

Note 1. Alternate Part #75D2-32 may be used in some versions.
* Use KR with CRL "red label" and KS with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R7	330Ω	2		
R8	330Ω			Note 1
R9	910K 5%			
R10	270K			
R11	2.2meg			Note 2
R12	2200Ω			
R13	910Ω 5%			
R14	22K			
R15	330Ω			
R16	47Ω			
R17	150K			
R18	150K			Note 3
R19	9100Ω 5%			
R20	330Ω			
R21	68Ω			
R22	1000Ω			
R23	8200Ω			
R24	120Ω			
R25	3900Ω			
R26	470K			
R27	470K			
R28	100Ω			
R29	1meg			
R30	68000Ω	2		
R31	15K			
R32	270K			
R33	18K			
R34	15000Ω 5%	2		
R35	27K			
R36	120K			
R37	39K			
R38	68K			
R39	39K			
R40	47K			
R41	27K	2		
R42	22K			
R43	330Ω			
R44	270Ω			
R45	390Ω			
R46	2200Ω			
R47	10K			
R48	10K			
R49	150Ω			
R50	2meg 5%		60B7-205	
R51	1.6meg 5%		60B7-165	
R52	330Ω	2		
R53	2.2meg			
R54	220K			
R55	47K			
R56	4.7meg			
R57	2.2meg			
R58	6800Ω			
R59	3300Ω			
R60	3300Ω			
R61	220K			
R62	100K 5%			
R63	1.8meg			
R64	15K			
R65	56K			
R66	1.5meg			
R67	220K			
R68	100K 5%			
R69	100K 5%			
R70	22Ω	1		
R71	470K			
R72	4.7meg			
R73	56000Ω			
R74	1500Ω			
R75	150K			
R76	82K			
R77	5600Ω			
R78	100Ω			
R79	470K			
R80	100Ω			
R81	10K	2		
R82	4700Ω	2		
R83	2200Ω			
R84	4.7Ω			
R85	10Ω	5	61A22	
R86	44Ω	20	61B3-21	
R87	470K			
R88	560Ω			
R89	560Ω			

Note 1. Some versions may use 1meg in this application.
Note 2. Some versions may use 10000Ω in this application.
Note 3. Some versions may use 10K in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Hallorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No	NOTES
T1	Vert. Output	79B43-4	21900 (1)(2)	A-2519	V312 (3)	A-8141 (3)	26B54 (3)	A-109X (4)	
T2A	Yoke-Horiz (15MH) (90°)-Vert. (39MH)	94D87-18 (4)	DF807 (5)(6)	MDF-92 (5)(6)	YW0F10/43 (5)(6)	DY-18A (5) (6)	Y-16 (5)(6)	Y-41 & NW2 (5)	
M4	Rear Cover & Centering Device	94B121-1							
	Yoke Clamp	19A112-3							
T3	Horiz. Output	79D74-1		HVO-135	X158 *	HO-254 (7) *	FLY-107 (7) *	D-105 *	

① Use 15 to 1 turns ratio.
② Connect as autoformer.
③ Drill new mounting hole(s).
④ Does not include rear cover and centering device.
⑤ Use original rear cover and centering device, mount with leads out top, connect same as original.
⑥ Use original horizontal damping network.
⑦ Trim terminal board to duplicate original and use original mounting brackets.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Hallorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4			4	3	3	4
2			2	6	6	2
1			1	4	1	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	ADMIRAL PART No.	Hallorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	3300Ω	3-4Ω	79D33-16	Z1105 (1)	A-3025		A-3326	24S48	S-12X	(1) Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA QUAM PART No	NOTES
SP1	4"	PM	3-4Ω	76B102-3	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	27.25MC Trap	72D11-29					
L2	1st. Video IF	72D11-28	17-1063		6260	VF-2	
L3	2nd. Video IF	72D11-28	17-1063		6260	VF-2	
L4	3rd. Video IF	72B179-1					Includes caps and 50 Microseries coil
L5	IF Trap Coil	72B24-9					3.4 Microseries
L6	RF Choke	72B24-4	19-3036	TV-180	6176	VP-1	36 Microseries
L7	Series Peaking Coil	72A5-23	19-3180 *	TV-184 *	6180 *	VP-5 *	186 Microseries, wound on 4700Ω resistor
L8	Shunt Peaking Coil	72B5-34		TV-307	6156		879 Microseries
L9	4.5MC Trap	72A132-7					
L10	Series Peaking Coil	72B5-22	19-3300 ▲	TV-198 ▲	6180 ▲		278 Microseries, wound on 33K resistor
L11	Shunt Peaking Coil	72B5-21	19-4400 ♦	TV-203 ♦	6156 ♦		400 Microseries, wound on 10K resistor
L12	Sound IF	72B99-14	30-1005				
L13	Ratio Det.	72C68-4					
L14	Line Choke	72B33-1					66 Microseries
L15	Fil. Choke	72A2-5	19-3001	BC-560	6175		.6 Microsery
L16	Fil. Choke	72A2-5	19-3001	BC-560	6175		.6 Microsery
L17	Fil. Choke	72A2-5	19-3001	BC-560	6175		.6 Microsery

* Parallel with 4700Ω resistor. ▲ Parallel with 33K resistor. ♦ Parallel with 10K resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18			94C17-4		TV-164				

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 ~/~	REPLACEMENT DATA ADMIRAL PART No.	Hallorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L19	.250A	54Ω	1.3 Hy.	74B18-15	C9037 (1)	C-3996 (1)		C-3328 (1)	28C44 (1)	C-17X (1)

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 6000mmf, 22K, 5300Ω, 820Ω	63C9-7	Aerovox	PA-110
				Centralab	PC-100
				Cornell-Dubilier	113T3M1
				Erie	1406-01
				Sprague	V-1

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ADMIRAL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.186A	93A4-2 (1)	1090A (1)	1N1007 (2)	RS3008L (1) 3FS1 (3)	300 (1) M500 (3)	(1) Selenium Type. (2) Germanium Type. (3) Silicon Type
M2	185A	93A4-2 (1)	1090A (1)	1N1007 (2)	RS3008L (1) 3FS1 (3)	300 (1) M500 (3)	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3	Tuner	94E140-3	VHF
M4	Centering Device	94B121-1	Includes yoke rear cover
M5	Ion Trap	94A15-4	
	Printed Board	A4830-3	

CABINETS & CABINET PARTS

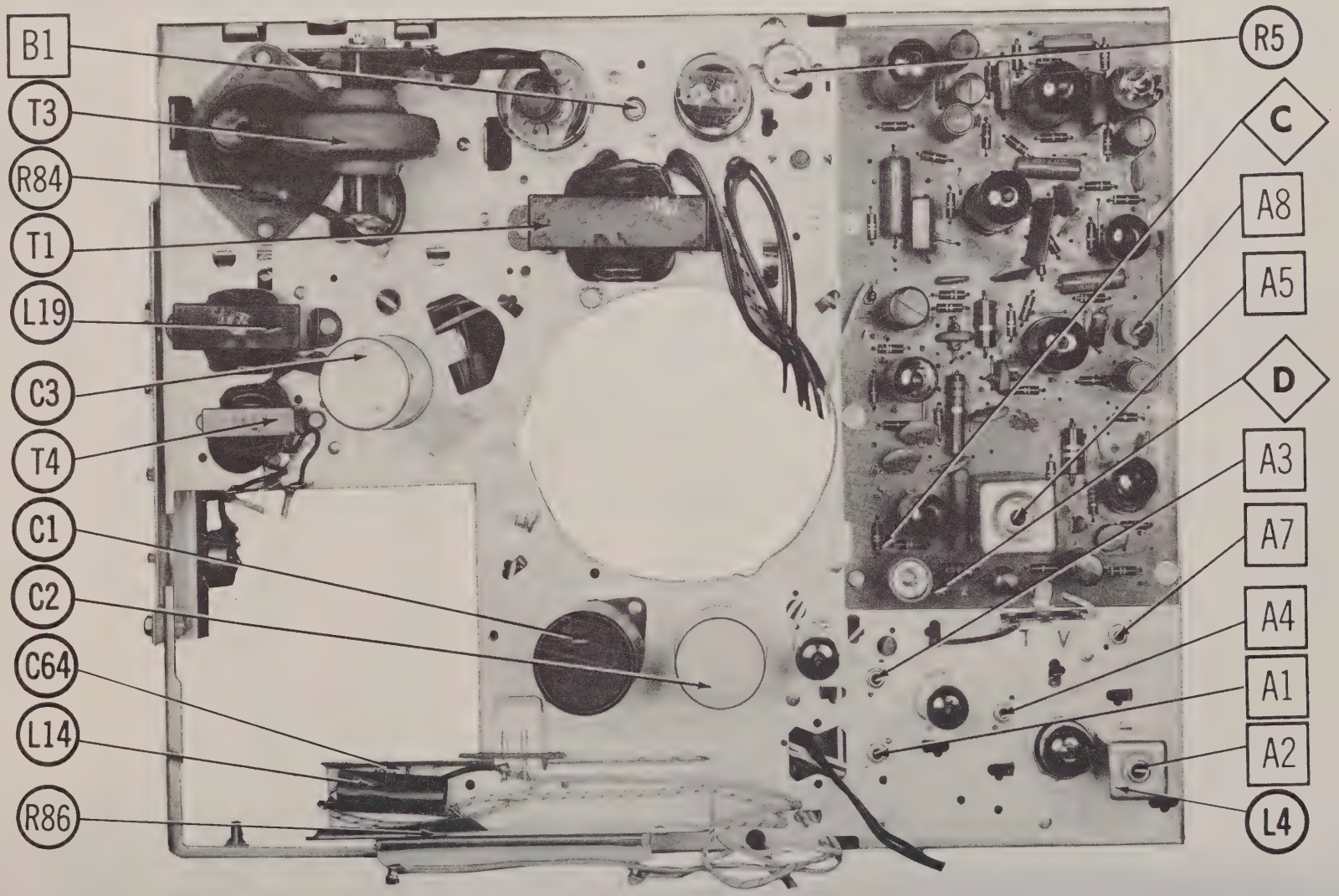
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

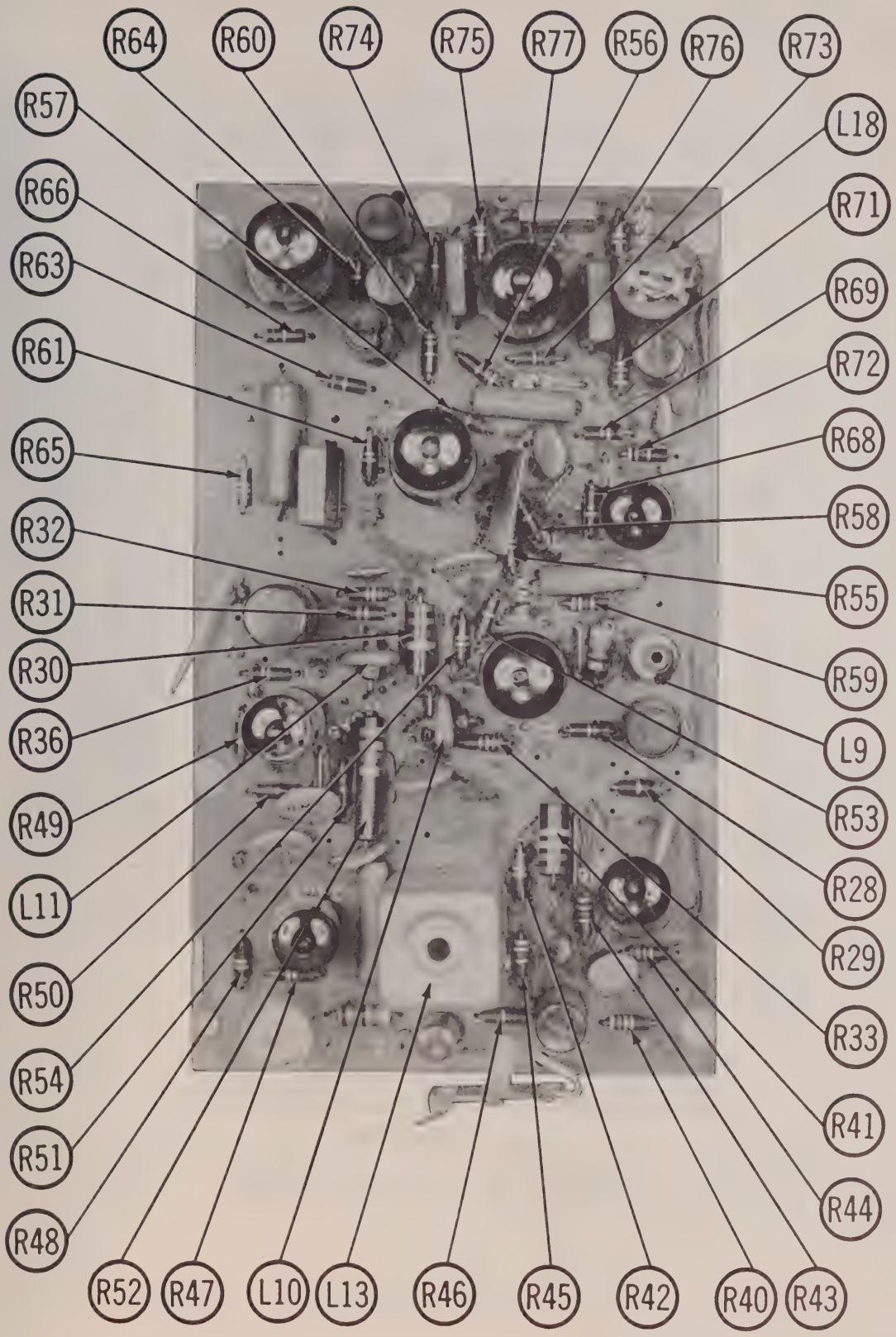
High Voltage Lead	Use BELDEN No. 8069
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

ADMIRAL MODELS T18A11N, T18A12, T18A13 (Ch. 17F1)

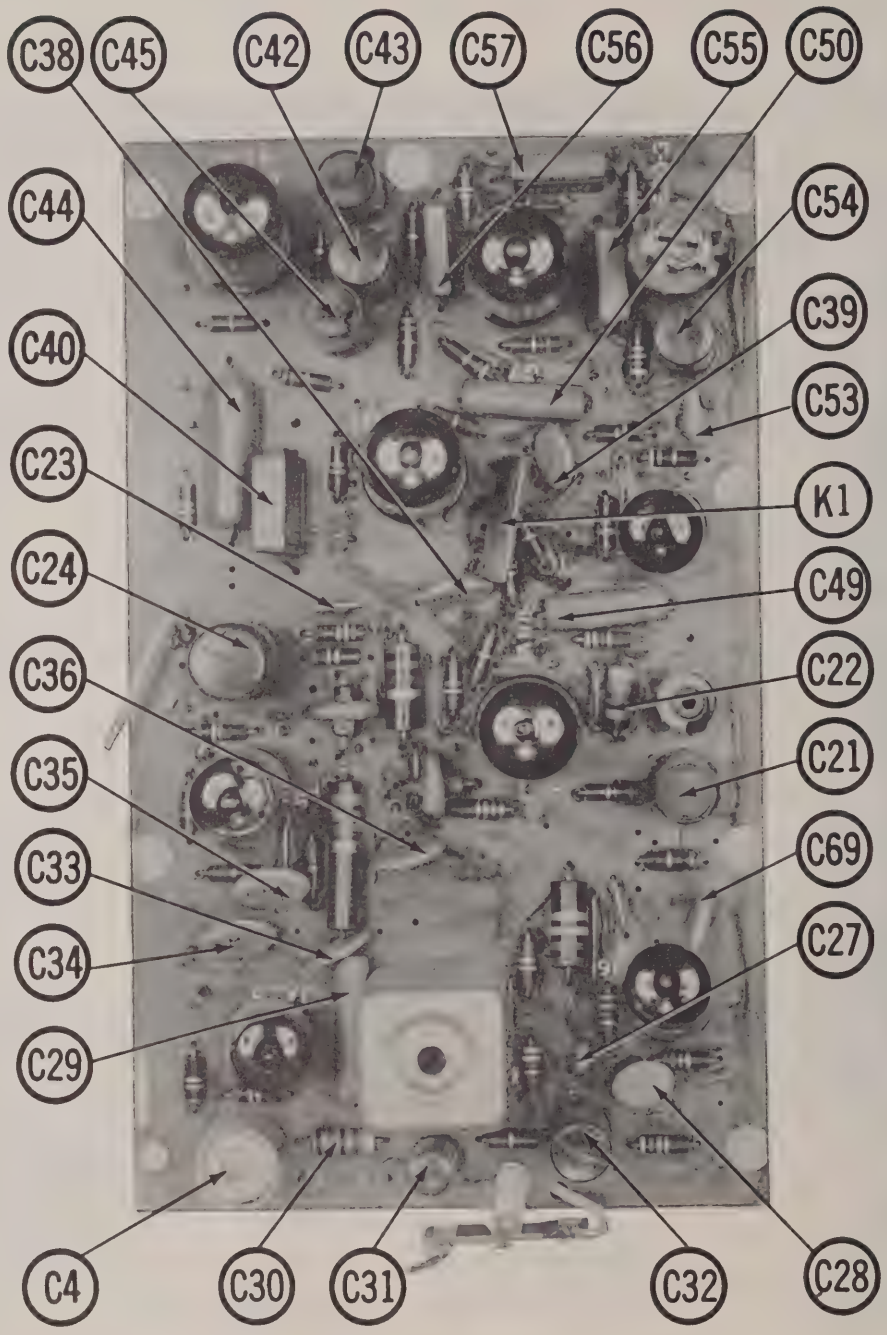
FOLDER 1



CHASSIS TOP VIEW



PRINTED BOARD—RESISTOR—INDUCTOR IDENTIFICATION



PRINTED BOARD —CAPACITOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3CB6	230K	47Ω	9.5Ω	9Ω	▲ 330Ω	▲ 330Ω	0Ω		
V2	3CB6	75 K	▲ 68Ω	9Ω	8.5Ω	† 330Ω	† 330Ω	INF		
V3	5AM8	120Ω	.3Ω	■ 8200Ω	8.5Ω	7.5Ω	■ 1000Ω	3.7Ω	3900Ω	0Ω
V4	5AN8	† 80K	2.2meg	0Ω	12Ω	11Ω	† 6800Ω	■ 18K	1meg	● 800Ω
V5	3AU6	85K	0Ω	2Ω	3Ω	† 27K	■ 330Ω	270Ω		
V6	3AL5	INF	INF	3Ω	4Ω	10K	0Ω	10K		
V7	12CA5	¶ 20K	750K	7.5Ω	5Ω	750K	† 330Ω	† 570Ω		
V8	6CG7	● ‡ 3.7meg	220K	● 100K	13.5Ω	12Ω	† 10K	1.4meg	3300Ω	0Ω
V9	6S4A	INF	● 1500Ω	1.5meg	15Ω	13.5Ω	1.5meg	NC	NC	‡ 5800Ω
V10	3AL5	22Ω	22Ω	1.5Ω	2Ω	4.8meg	0Ω	4.8meg		
V11	6CG7	† 5600Ω	5.2meg	1500Ω	1.5Ω	0Ω	† 82K	150K	1500Ω	0Ω
V12	12DQ6	TP	15Ω	TP	† 10K	470K	NC	18Ω	0Ω	TOP CAP ‡ 25Ω
V13	12AX4GTA	NC	TP	¶ 1.3meg	NC	† 0Ω	TP	21Ω	18Ω	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 520Ω
V15	17AUP4A	5Ω	39K	PIN 6 ‡ 4700Ω	PIN 10 ‡ 4700Ω	PIN 11 ● 140K	PIN 12 4Ω			
V201	4BZ7	† 3300Ω	300K	INF	10Ω	9.5Ω	INF	1.1meg	0Ω	0Ω
V202	5J6	† 10K	† 8500Ω	11Ω	10Ω	230K	10K	0Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING MAY VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

▲ MEASURED FROM PIN 7 OF V2.

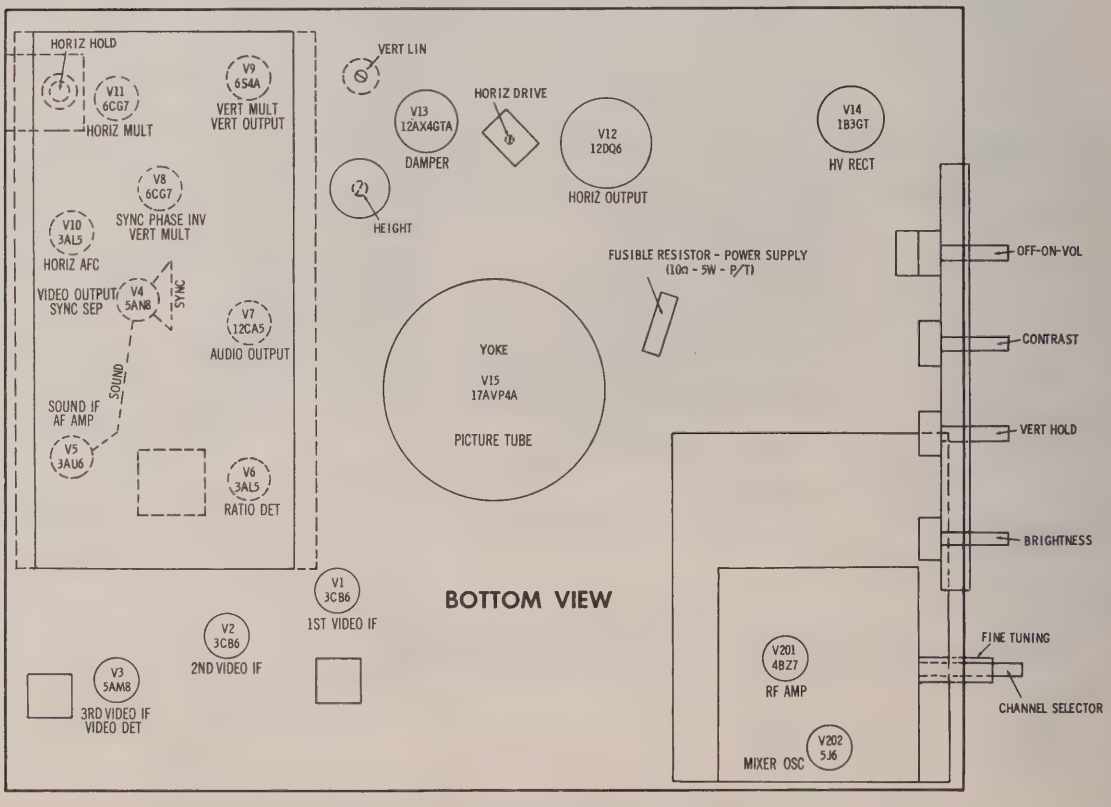
■ MEASURED FROM 145V SOURCE.

† MEASURED FROM 255V SOURCE.

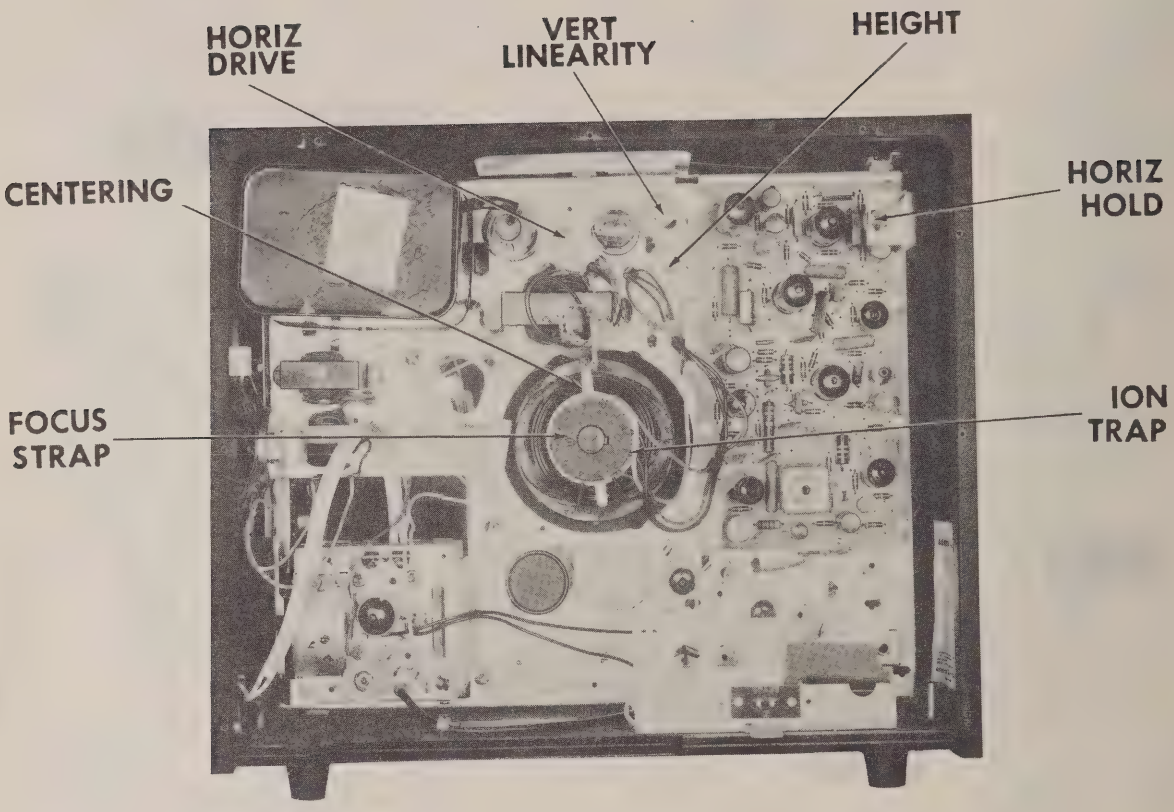
‡ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.

2. Set the Brightness and Contrast controls for a normal picture.

3. Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

4. Turn the Horizontal Hold slowly counter clockwise until the picture just falls into sync.

5. Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive trimmer (B1) until white lines disappear.

6. If in step 5 the Horizontal Drive was adjusted, tune in a TV station and repeat steps 3 and 4. Check horizontal sync by switching off channel and back again.

MAGNAVOX CHASSIS U25-01AA through -11AA, V25-01AA through -11AA (25 Series)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 10 push-on type knobs from the top.

2. Remove 11 wood screws holding the rear cover. Remove the rear cover.

3. Remove the speaker leads and ground strap to tuner and control bracket.

4. Using the horseshoe shape spanner wrench supplied with cabinet, remove 2 nuts from the on-off-volume and contrast controls which hold the tuner and control bracket to the cabinet.

5. Remove 6 bolts from the bottom holding the chassis mounting board.

6. Remove the chassis.

TRADE NAME	Magnavox	CHASSIS U25-01AA, U25-02AA, U25-03AA, U25-04AA, U25-05AA, U25-06AA, U25-07AA, U25-08AA, U25-09AA, U25-10AA, U25-11AA, V25-01AA, V25-02AA, V25-03AA, V25-04AA, V25-05AA, V25-06AA, V25-07AA, V25-08AA, V25-09AA, V25-10AA, V25-11AA (25 Series)
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Ind.	
TYPE SET	Television Receiver	
TUBES	Twenty	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 170 Watts, 1.57 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding the metal trim at the top of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10 or 6 and 2.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

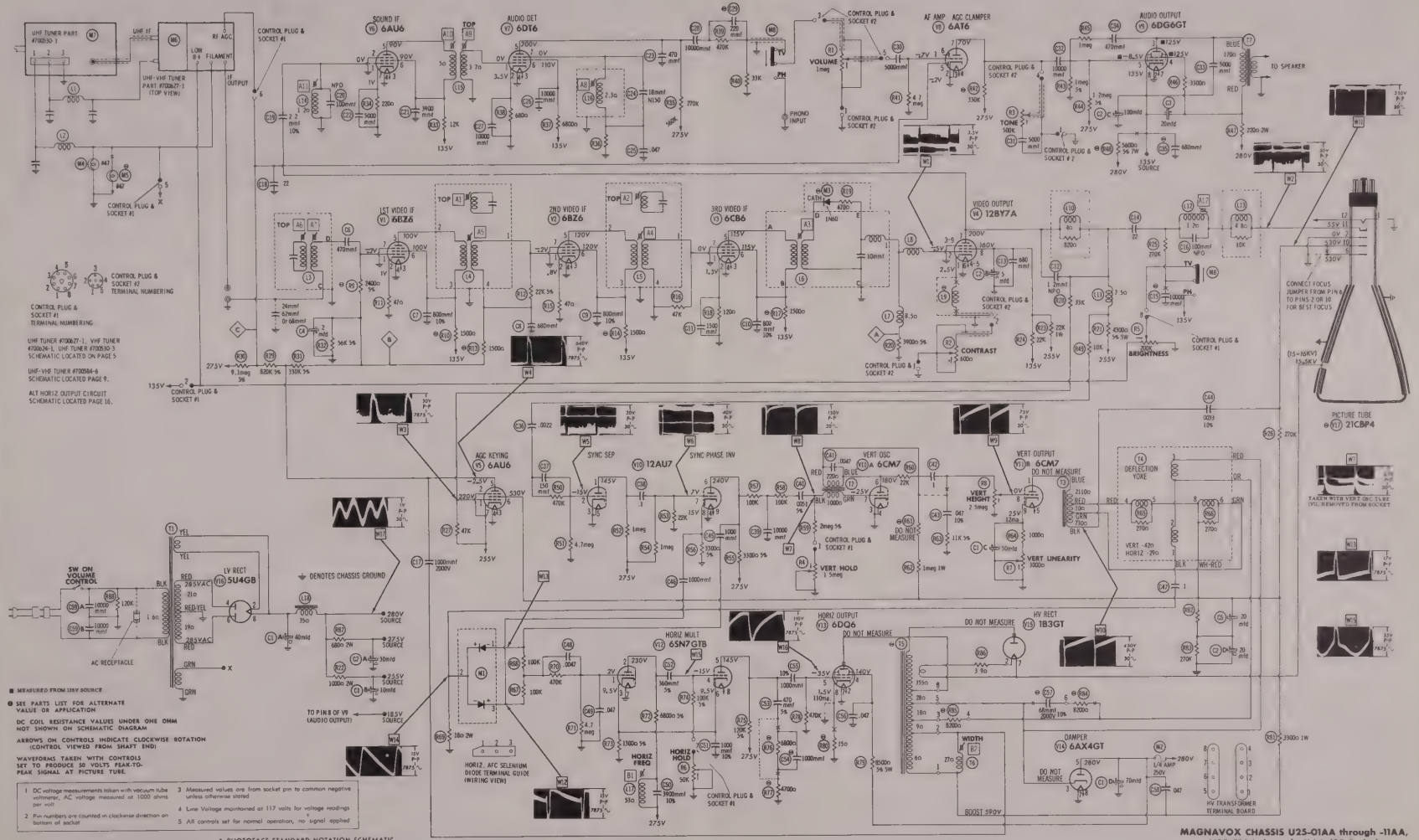
FUSES

One fuse is used for Horizontal Sweep circuit protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

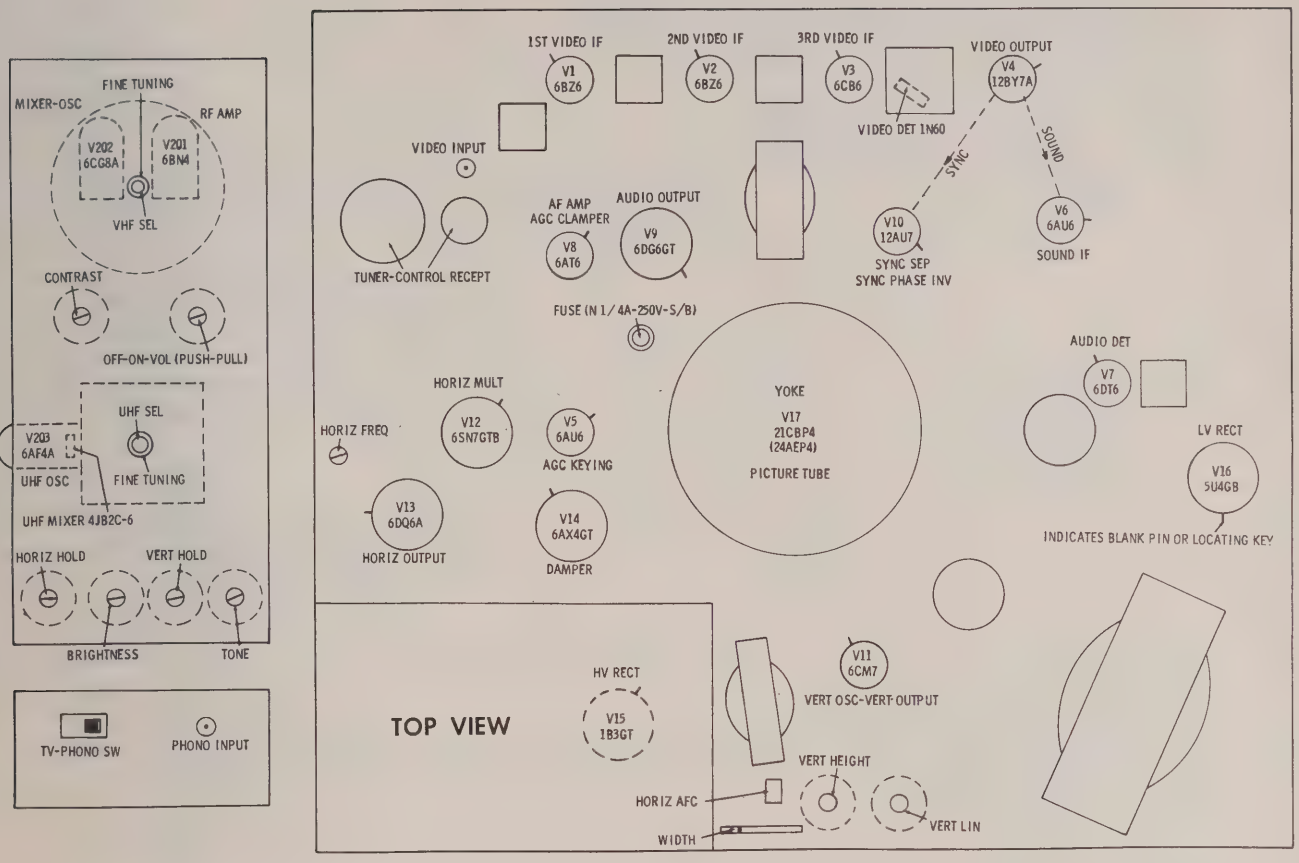
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


SOUND IF V6 6AU6
AUDIO DET V7 6DT6
AF AMP AGC CLAMPER V8 6AT6
AUDIO OUTPUT V9 6DG6GT
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6
VIDEO OUTPUT V4 12BY7A
AGC KEYING V5 6AU6
SYNC SEP V10 12AU7
SYNC PHASE INV
VERT OSC V11a 6CM7
VERT OUTPUT V11b 6CM7
HORIZ MULT V12 6SN7GTB
HORIZ OUTPUT V13 6DQ6
HV RECT V18 1B3GT
DAMPER V14 6AX4GT
LV RECT V16 5U4GB
PICTURE TUBE V17 21CBP4
VOLUME
TONE
CONTRAST
BRIGHTNESS
VERT HOLD
VERT HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
WIDTH
BOOST 590V
SW ON VOLUME CONTROL
AC RECEPTACLE
DENOTES CHASSIS GROUND
TO PINS OF V9 (AUDIO OUTPUT)
CONTROL PLUG & SOCKET #1
CONTROL PLUG & SOCKET #2
TO SPEAKER
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 2 OR 10 FOR BEST FOCUS
DEFLECTION YOKE
HV TRANSFORMER TERMINAL BOARD
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE (WIRING VIEW)
DO NOT MEASURE
MEASURED FROM 135V SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

MAGNAVOX CHASSIS U25-01AA through -11AA, V25-01AA through -11AA (25 Series)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V16

SWEEP FAILURE
No raster, has sound Fuse (M2), Rectifier (M1), V12, V13, V14, V15, V17
No vertical deflection V11
Poor vert. linearity or foldover V11
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, V16
Vert. off freq. V11
Horiz. off freq. V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M3), V4, V9
No pic, no sound, has snow V201, V202, V1, (V203 UHF only)
No pic, has sound, has raster V4, V17
Has pic, no sound V6, V7, V8, V9
Overloaded picture V5

SYNC FAILURE
No vert. sync V10
No horiz. sync V10, M1
No vert. or horiz. sync V10

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the negative lead of a 3 volt bias supply to point Ⓑ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Detune Mixer Plate Coil by turning core fully counterclockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 6BZ6 (V1). Low side to chassis.	43.5MC	47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓒ. Low side to chassis. (Across Video Det. Load)	A1, A2	Adjust to place marker in trap notch. If two points are found to do this, use the one with slug farthest counterclockwise.
2.	"	"	"	42.25MC	"	"	A3, A4, A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A3 for maximum gain, A4 to position 45.75MC marker and A5 to place 42.25MC marker. Recheck step 1.
3.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC	"	"	A6	Adjust to place marker in trap notch. If two points are found to do this, use one with slug farthest counterclockwise.
4.	"	"	"	41.25MC 42.25MC 45.0MC 45.75MC	"	"	A7 & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate coil for maximum gain with 45.75MC marker at 50%. Adjust A7 for maximum gain and proper tilt. Due to interaction it may be necessary to repeat adjustment. Recheck step 3.

SOUND IF ALIGNMENT

Turn the Contrast control fully clockwise and A8 fully counterclockwise.
Tune in a strong TV signal(preferably with a tone signal or music). Adjust A8 just past the point of maximum sound and MINIMUM distortion.
Reduce the signal strength by disconnecting the antenna or connecting an adjustable attenuator between the antenna leads and the receiver antenna terminals so that with the Volume control set fully clockwise the sound is at a low level. Tune the Fine Tuning thru undistorted sound.
Set the Fine Tuning to the verge of distortion.
Adjust A9, A10 and A11 for MINIMUM distortion.
Readjust the Fine Tuning during adjustments of A9, A10 and A11 to keep it at the verge of distortion.

4.5MC TRAP ALIGNMENT

Tune in a TV station and turn the Fine Tuning slowly clockwise until 4.5MC beat interference becomes visible in the picture. Adjust A12 until the horizontal scanning lines are smooth and continuous.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6, 16, 19.

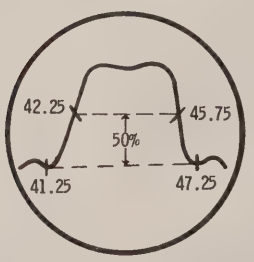
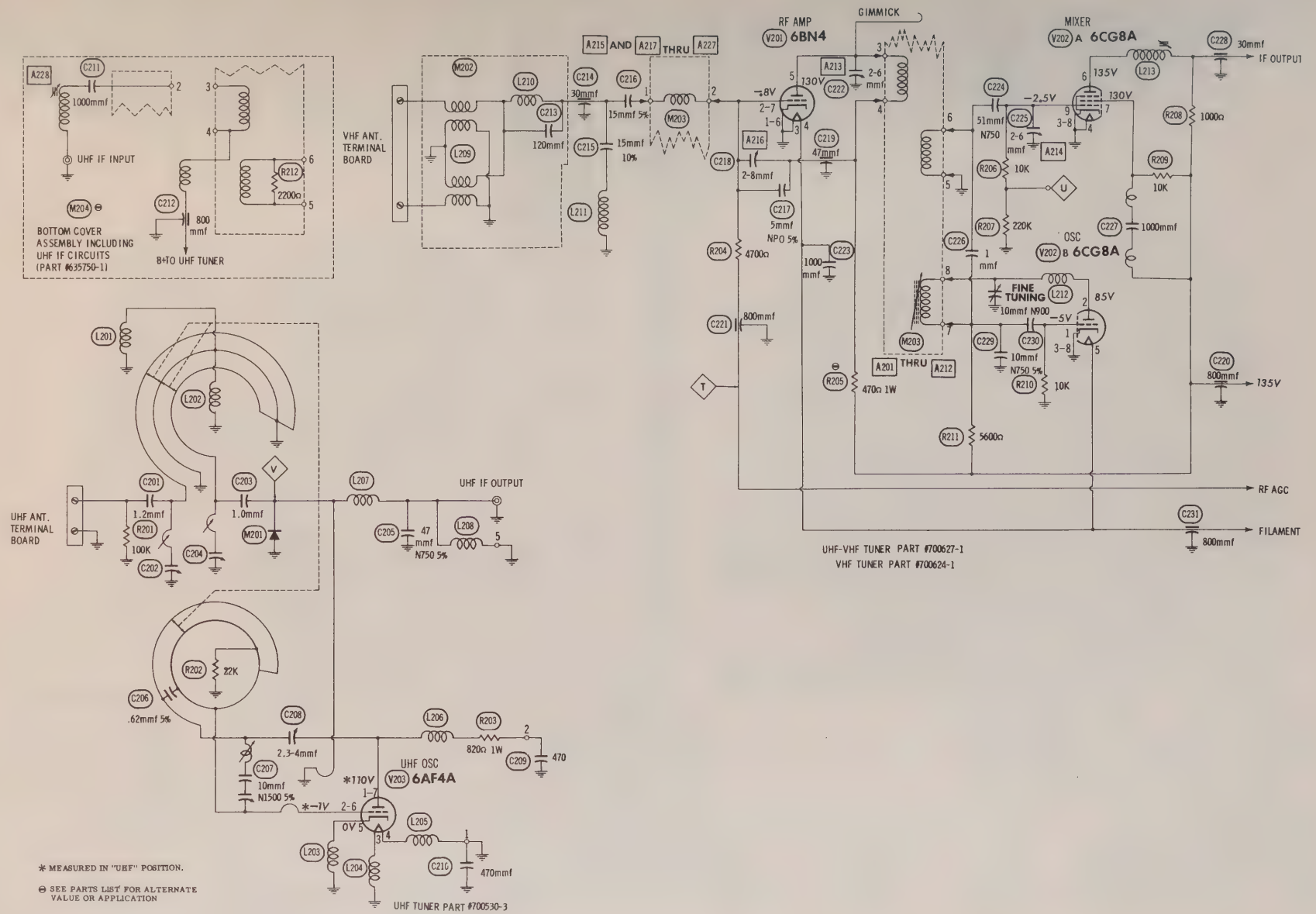


FIG. 1



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUNER #700530-3, #700624-1, #700627-1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓣ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 202). to plate of 1st. IF tube. Low side to chassis.	A203	Adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓣ. Low side to chassis.	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75 MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

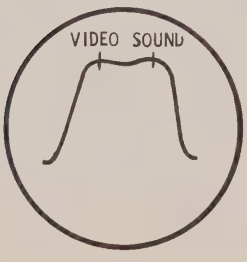


FIG.201

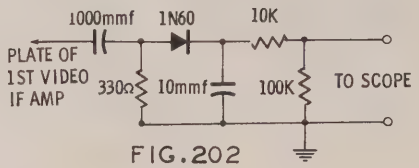


FIG.202

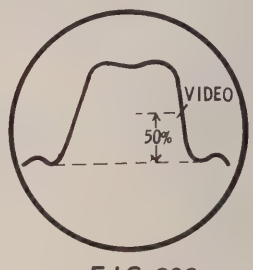
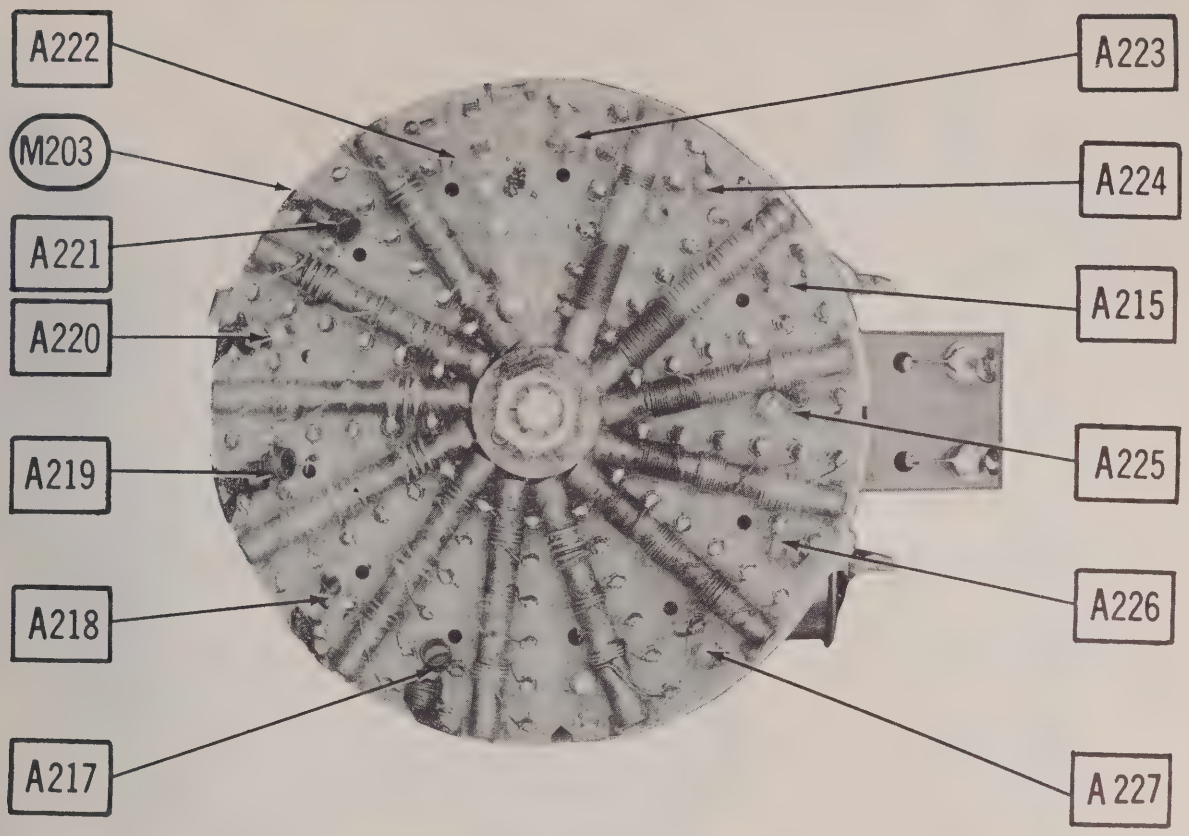
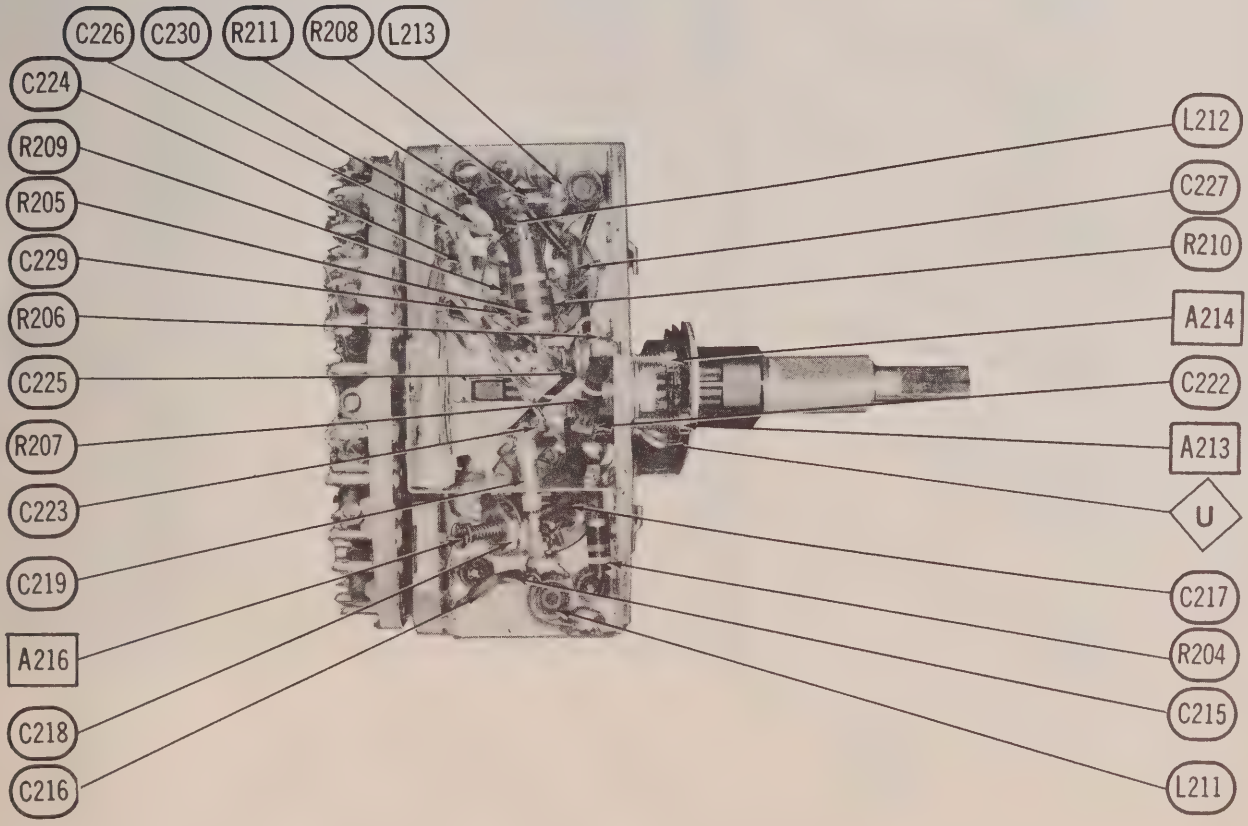


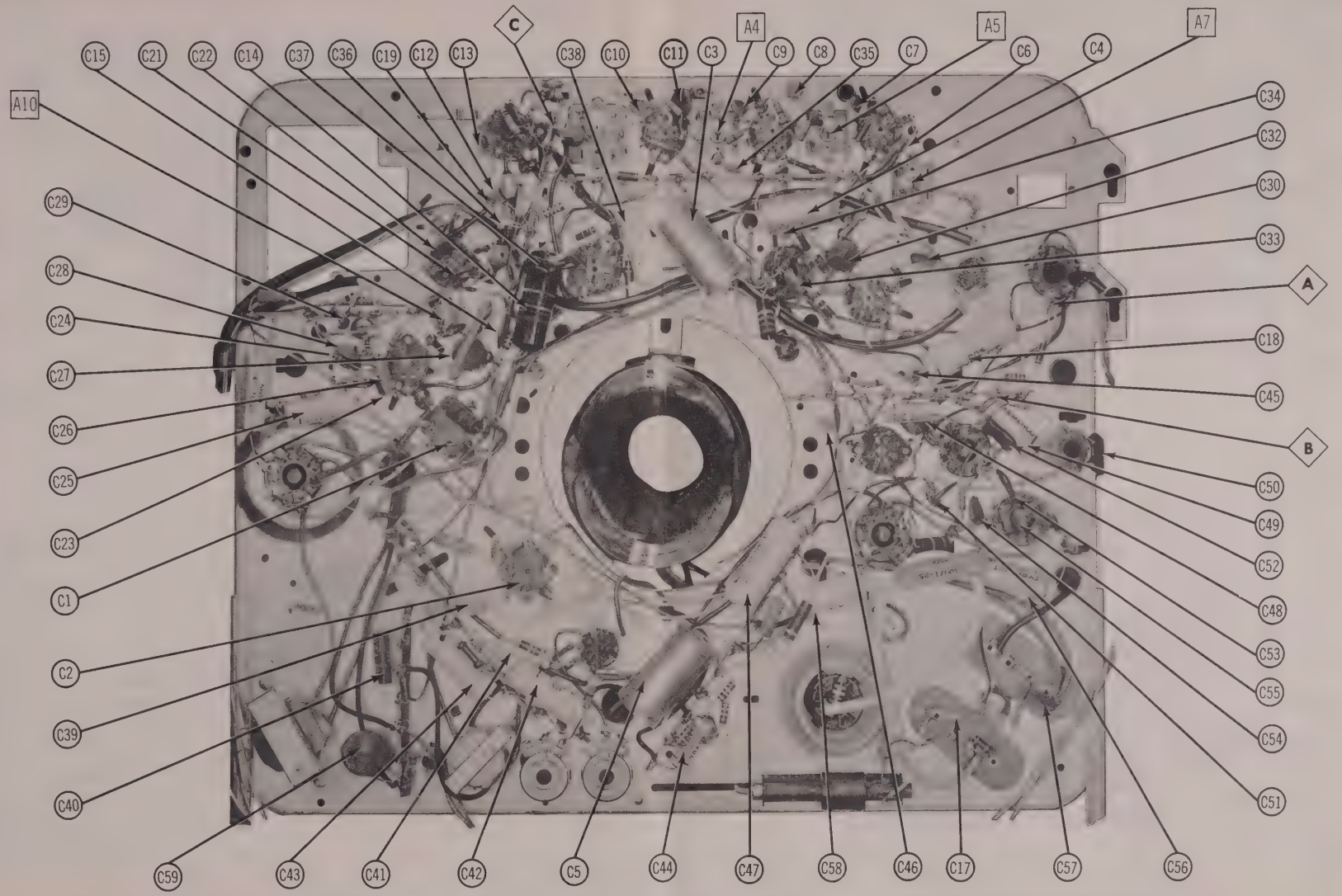
FIG.203



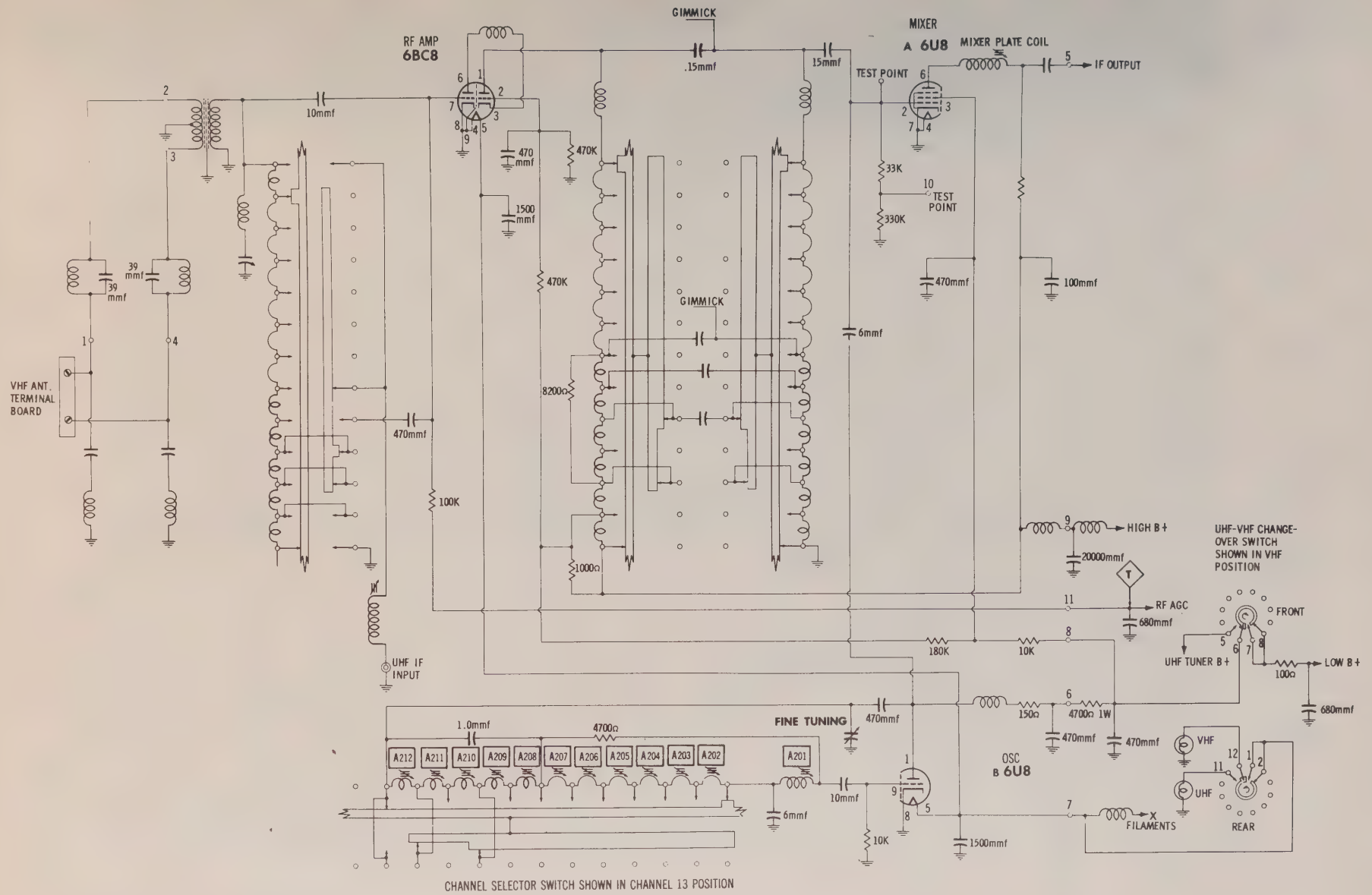
RF TUNER ROTARY ASSEMBLY



RF TUNER BOTTOM VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

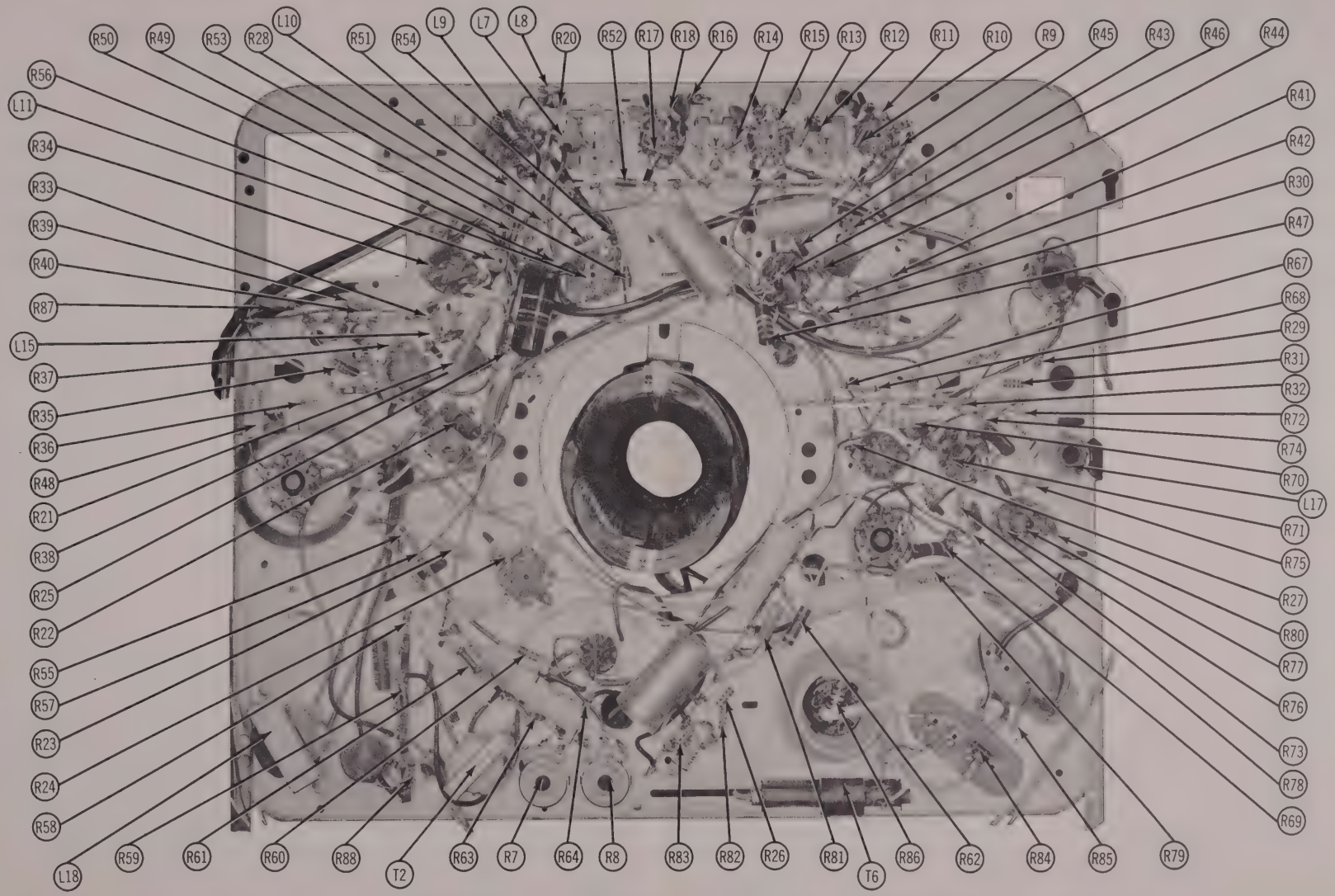


CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

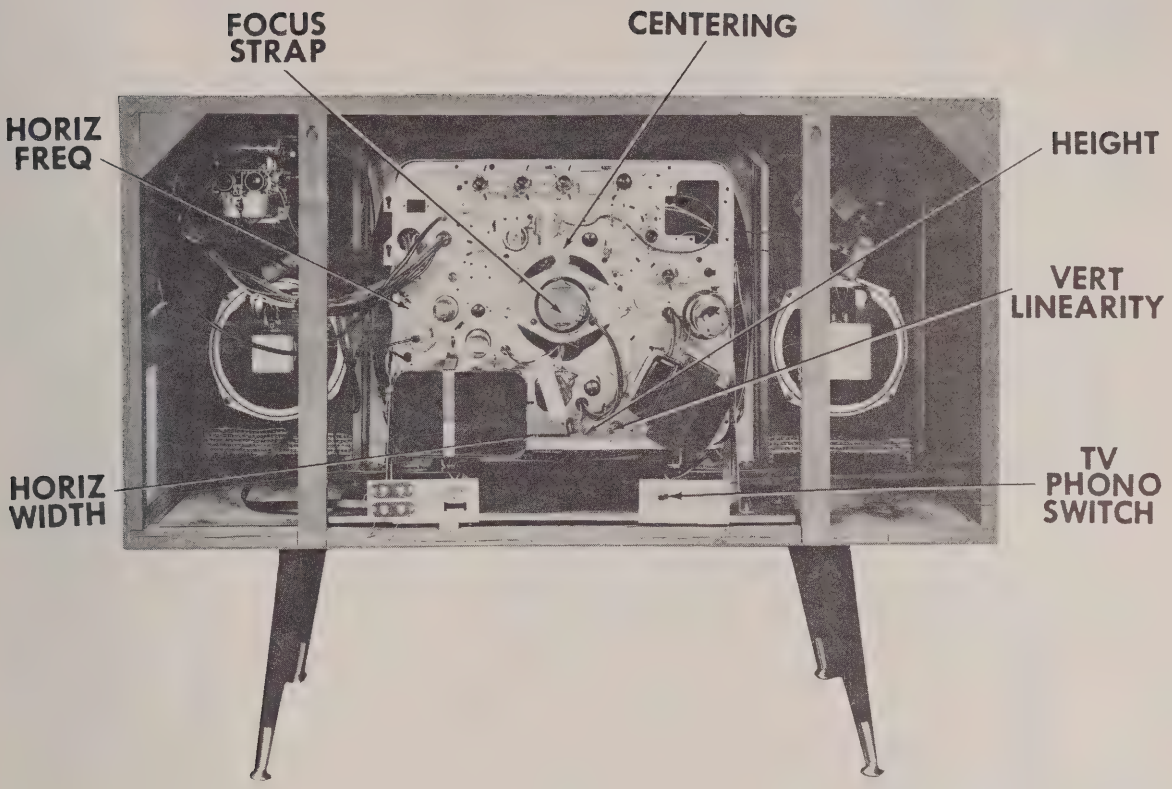
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF-VHF TUNER #700584-6

SET 402 FOLDER 2



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Set the Horizontal Hold control to the center of its range. Adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. Keep turning B1 in the same direction until the picture just falls out of sync. Reverse the direction of rotation until the picture just falls in sync. Rotate the Horizontal Hold control to both extreme ends of rotation. The picture should either stay in sync at both ends of rotation or should fall out of sync by an equal number of bars at each end. If either of these conditions fail to occur, repeat procedure.

Adjust the Width slug for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp.	6BZ6	
V2	2nd Video IF Amp	6BZ6	
V3	3rd Video IF Amp.	6CB6	
V4	Video Output	12BY7A	
V5	AGC Keying	6AU8	
V6	Sound IF Amp.	6AU6	
V7	Audio Det	6DT6	
V8	AF Amp -AGC Clamper	6AT6	

ITEM No	USE	TYPE	NOTES
V9	Audio Output	6DG6GT	
V10	Sync Sep. -Sync Phase Inv.	12AU7	
V11	Vert. Osc. -Vert. Output	6CM7	
V12	Horiz Mult.	6SN7GTB	
V13	Horiz Output	6DQ6A	
V14	Damper	6AX4GT	
V15	HV Rect.	1B3GT	
V16	LV Rect.	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: MAGNAVOX PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V17	21CBP4 ① 21CBP4A 24AEP4		21CBP4-A ① 21CBP4 ② 24AEP4	21CBP4/ 21CBP4A ② 24AEP4	① "Silverama" ③ ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1A	ø40	350	270041-54	RE1008	D047I	FP431.3 TC47		Q-321.5 MT-4510	TVL-4631	
B	a10	350								
C	50	50								
D	ø70	350								
C2A	ø30	350	270021-54	AFH4-56-93.5	D041S	FP430.33 TC62		T-735 MTD-4508	R2346 *	
B	a5	350								
C	100	200								
D	ø20	350								
C3	20	350	270047-20	PRS450V20	BR2035	TC65	TD-20-350	MT-4520	TVA-1608	
C4	3	50	270037-23	PRS50V3	BBR2-50	TC102	TD-3-50	MT-4503	TVA-1303	
C5	20	350	270027-20	PRS350V20	BR2035	TC65	TD-20-350	MT-4520	TVA-1608	

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	470		250218-8	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C7	800		250218-14						10%
C8	680		250218-4	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C9	800		250218-14						10%
C10	800		250218-14						10%
C11	1500		250218-18	BPD-0015	DD-154	BYA10D15	DC5215	5HK-D15	NPO
C12	12		250246-310			C10Q12C			
C13	680		250218-4	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C14	.33	400	250311-15	PS400-33		CUB4P33	GEM-4022	4TM-P22	
C15	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	①
C16	100		250175-59	NPO-DI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO
C17	1000	2000	250175-27	HVD-30-1000	DCS10-102	HVB3D10	DC3Q2	30HD-D1	
C18	.22	300	250203-15	P388N-S2		CUB2P22	GEM-3023	4TM-P22	
C19	2.5		250221-116		TCZ-2R5				10%
C20	100		250175-60	NPO-DI 100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO
C21	3900		250175-31		DD-392	L10D39			
C22	5000		250175-1	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C23	470		250218-8	BPD-00047	DD-471	BYA10Q47	DC-5347	5GA-T47	
C24	18		250175-54						N150
C25	.047	200	250204-11	P488N-047	DF-503	CUB2S47	GEM-4147	4TM-S47	
C26	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C27	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C28	10000		250175-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C29	220			EA-220	DD-221	L10T22	UC-5322	5GA-T22	④
C30	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C31	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C32	10000		250175-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C33	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C34	470		250218-8	BPD-00047	DD-471	BYA10Q47	UC-5347	5GA-T47	
C35	680		250218-4	BPD-00068	DD-681	BYA10Q68	UC-5368	5GA-T68	①
C36	.0022	400	250211-3	P488N-0022	D6-222	CUB6D22	GEM-6222	6TM-D22	
C37	150	400	450219-534	1468-00015	DD-151	5WS715	MC-236	1FM-315	
C38	.1	400	250211-13	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C39	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C40	.0051	400	250218-12						5%
C41	.0047	400	250211-5	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C42	.1	400	250211-13	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C43	.047	400	250211-7						10%
C44	.0033	600	250204-4	P688N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C45	1000		250218-8	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C46	1000		250218-8	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C47	.1	600	250205-13	P688N-1	DF-104	CUB5P1	GEM-501	5TM-P1	
C48	.0047	600	250213-4	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C49	.047	200	250212-5						10%
C50	3900		250218-468	1464-0039		1R5S39		MS-339	10%
C51	1000		250218-8						10%
C52	39		250219-343	1469-00038		5RS736		MS-336	5%
C53	470		250219-346	1469-00047		5RS747		MS-347	5%
C54	1000		250236-5	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	⑤
C55	1000		250218-8						10%
C56	.047	400	250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C57	68	2000	250175-22			HVA10Q68		20GA-Q68	
C58	.047	400	250211-11	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	10% ①
C59A	10000		250218-3	BPD-EX01	DD3-103	BYD5S1	DC511	5HK-S51	
B	10000						DC511		

① Not used in some versions.
④ Ch. U/V25-07AA use 100mmf in this application (Part #250218-32).

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: MAGNAVOX PART No	CENTRALAB PART No	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	220135-1					Volume
B	Switch							
R4A	500Ω	½	220126-56	B-515		Q1T-106	U7S1R	Contrast
B	Shaft			Not Req.		Not Req.	Not Req.	
R3A	500K	½	220132-4	B-60	A47-500K-Z	Q13-133	TA55A	Tone
B	Shaft			Not Req.		Not Req.	Not Req.	
R4A	1.5meg	½	220132-13	B-743	A47-1.5meg -S	Q2U-135	TA55L	Vert. Hold
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

PARTS LIST AND DESCRIPTIONS

CONTROLS (cont)

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R5A	200K	½	220132-2	B-46	A47-200K-S	Q1U-139	U43	Brightness
B	Shaft			Not Req.	KSS-3	SK3	Not Req.	
R6A	50K	½	220123-1	B-31	A47-50K-S	Q1U-133	TA54L	Horiz. Hold
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R7A	3000Ω	½	220146-5	AB-5	A47-3000-S	BU-112	PTA3541	Vert. Lin.
B	Shaft			AK-1	FKS-1/4	SK3	Not Req.	
R8A	2.5meg	½	220146-3	AB-53	A47-2.5meg -S	BU-139	TA55L	Vert. Height
B	Shaft			AK-1	FKS-1/4	SK3	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise noted.

ITEM No.	RATING: OHMS	WATT	MAGNAVOX PART No.	NOTES
R9	2400Ω 5%		230094-168	Note 1
R10	1500Ω			Note 2
R11	47Ω		230104-46	
R12	22K 5%		230094-191	
R13	1500Ω			Note 2
R14	1500Ω			Note 2
R15	47Ω		230104-46	
R16	47K		230104-83	
R17	1500Ω			Note 2
R18	120Ω		230104-51	
R19	470Ω		230104-58	
R20	3900Ω 5%		230094-173	
R21	4300Ω 5%	5	230094-254	
R22	1000Ω	½	230106-62	
R23	22K	1	230105-78	
R24	22K		230104-78	
R25	470K		230104-91	
R26	470K		230104-91	
R27	47K		230104-83	
R28	33K		230104-80	
R29	820K 5%		230094-229	
R30	9.1meg 5%		230094-254	
R31	330K 5%		230094-219	
R32	56K 5%		230094-201	
R33	12K		230104-75	
R34	420Ω		230104-54	
R35	270K		230104-91	
R36	560K		230104-95	
R37	6800Ω		230104-72	
R38	680Ω		230104-60	
R39	470K		230104-94	
R40	33K		230104-80	
R41	4.7meg		230104-106	
R42	330K		230104-94	Note 3
R43	1meg 5%		230094-231	
R44	1 4meg 5%		230094-233	
R45	1meg		230104-78	
R46	3300Ω		230104-68	
R47	220Ω	½	230106-56	
R48	5600Ω 5%	7	240078-13	Note 4

ITEM No.	RATING: OHMS	WATT	MAGNAVOX PART No.	NOTES
R49	10K		230104-74	
R50	470K		230104-94	
R51	4.7meg		230104-106	
R52	1meg		230104-98	
R53	22K		230104-78	
R54	1meg		230104-98	
R55	3300Ω 5%		230094-171	
R56	3300Ω 5%		230094-171	
R57	100K		230104-86	
R58	100K		230104-86	
R59	2meg 5%		230094-238	
R60	22K		230104-78	
R61			230130-2	Note 5
R62	1meg	1	230105-98	
R63	11K 5%		230094-184	
R64	100Ω		230104-52	
R65	270Ω		230104-55	
R66	270Ω		230104-55	
R67	100K		230104-86	
R68	100K		230104-86	
R69	18Ω	2	230106-41	
R70	470K		230104-94	
R71	4.7meg		230104-106	
R72	6800Ω 5%		230094-179	
R73	1300Ω 5%		230094-182	
R74	100K 5%		230094-207	
R75	120K 5%		230094-209	
R76	6800Ω		230104-118	Note 4
R77	4700Ω		230104-70	Note 6
R78	470K		230104-94	
R79	8800Ω 5%	5	270071-25	
R80	15Ω		230104-40	Note 4
R81	3300Ω	1	230105-68	
R82	470K		230104-91	
R83	270K		230104-91	
R84	8200Ω		230104-73	Note 4
R85	1meg		230104-78	Note 7
R86	3.9Ω		230107-3	
R87	680Ω	2	230104-60	
R88	120K		230104-1	

Note 1. Ch. U/V25-01AA, -02AA, -03AA, -04AA, -08AA, -09AA, -07AA use 3600Ω 5% (Part #230094-172).
Ch. U/V25-08AA, -09AA, -10AA use 3000Ω 5% (Part #230094-170).
Note 2. Some versions may use 1000Ω in this application (Part #230104-62).
Note 3. Some versions may use 270K in this application (Part #230104-91).
Note 4. Not used in some versions.
Note 5. Temperature Compensating. Do not measure.
Note 6. Some versions use 12K in this application (Part #230104-75).
Note 7. Some versions use 27000 in this application (Part #230104-67).

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	117VAC ②1.57A	560VCT ③.240A	5VAC ④ 3A	300093-1		P-307X①			26R90 ①	R-56BC①
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC ④8.5A									

① Use original mounting brackets.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T2	Vert. Osc.	320262-2	B6702	A-3003	V406	VBO201	26A04	A-124X	
T3	Vert. Output	320278-1							
T4A	Yoke-Horiz. (41MHz)	360617-1	DF613 ①	MDF-93 ①	Y90F19/43 ①	DY-16A①	Y-15 ①	Y-41 & NW22	
B	(90°)-Vert. (45MH)								
M9	Rear Cover & Centering Device	360738-1						YC-1	
T5	Horiz. Output	360700-2		RVO-175	X162 *	A-8295 *		D-92 *	
	Alt. Horiz. Output	360700-1		RVO-175 ②	X152 ②	A-8295 ②		D-92 ②	
T6	Width Coil (7-42MH)	360699-1		MWC-13 ③	20R3A ③	WC-18	WC-19 ③	WLC-3 ③	

① Use original yoke damping network and original rear cover and centering device.
② When replacing horizontal output (Magnavox Part #360700-1), refer to alternate horizontal output circuit.
③ Drill new mounting holes.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
8			8	8		8
5			5	5		5
3			3	3		3
2			4	2		2
1			1	1		1
Connect Width Coil Across	4 & 1		2 & 1	2 & 1		4 & 1

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T7	3100Ω	3-4Ω	320279-1	22L06 ①	A-3018	AU-500	A-3823	26B50	S-16X ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: MAGNAVOX PART No.	QUAM PART No	NOTES
SP1	8"	PM	6-8Ω	583765	8A3IZ8	
SP2	8"	PM	4-6Ω	583665	8A42S 6	
SP3	4"	PM	4-6Ω	583779-1	4A07	
SP4	4"	PM	4-6Ω	583779-1	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L1	RF Choke		19-1000	BC-561	4602		1 Microhenry, IRC Part #CLA
L2	RF Choke		19-1000	BC-561	4602		1 Microhenry
L3	1st. Video IF	360654-1					Includes 41.25MC Trap
L4	2nd. Video IF	360644-1					Includes 47.25MC Trap
L5	3rd. Video IF	360644-1					Includes 47.25MC Trap
L6	4th. Video IF	360643-1		17-4814			Complete assy.
L7	Shunt Peaking Coil	360622-16		19-3300	TV-196	6130	478 Microhenries
L8	RF Choke	360443-23		19-1004	BC-566	4610	6 Microhenries
L9	Cathode Choke	360620-1		19-1001	BC-562	4604	VP-9	1.65 Microhenries ①
L10	Series Peaking Coil	360622-14		19-3075 *	TV-186 *	6172 *	VP-3 *	75 Microhenries, wound on 82000Ω resistor
L11	Shunt Peaking Coil	360622-9		19-3250	TV-185	6181	VP-6	235 Microhenries
L12	4.5MC Trap	360714-1						
L13	Series Peaking Coil	360622-13		19-3100 ▲	TV-194 ▲	6113 ▲	VP-3 ▲	100 Microhenries, wound on 10K resistor
L14	1st. Sound IF	360714-1						
L15	2nd. Sound IF	360715-1						
L16	Quadrature Coil	360716-1					SD-5 *	

① Not used in Ch. U/V25-01AA, -02AA, -03AA, -08AA, -09AA.
* Parallel with 8200Ω resistor.
▲ Parallel with 10K resistor. Remove C24 (16mmf).

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	SEC	REPLACEMENT DATA: MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordorson PART No	NOTES
L17	53Ω		360579-1	19-1676	TV-163	6210	H-102	EH-5	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ^c/s)	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No
L18	.235A	35Ω	.45 Hy.	320058-3	C5040 ①	C-2974 ①		C-2326 ①	38C41 ①	C-41X①

① Drill new mounting hole.

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: MAGNAVOX PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1		530045-2 ①	1215 ①②		171 ①②		① Selenium type. ② Two required.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: MAGNAVOX PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No FUSE	HOLDER
M2	N	1/4A 250V S/B	180590-3		333.250 (N 1/4A 125V S/B)		N 1/4	HN 0 to 3/4
						346008		

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: MAGNAVOX PART No.	CBS PART No	SYLVANIA PART No	NOTES
M3	1N60 *		1N60	1N60	Video Det (Pigtail) * Some versions may use a 1N54 in this application.

MISCELLANEOUS

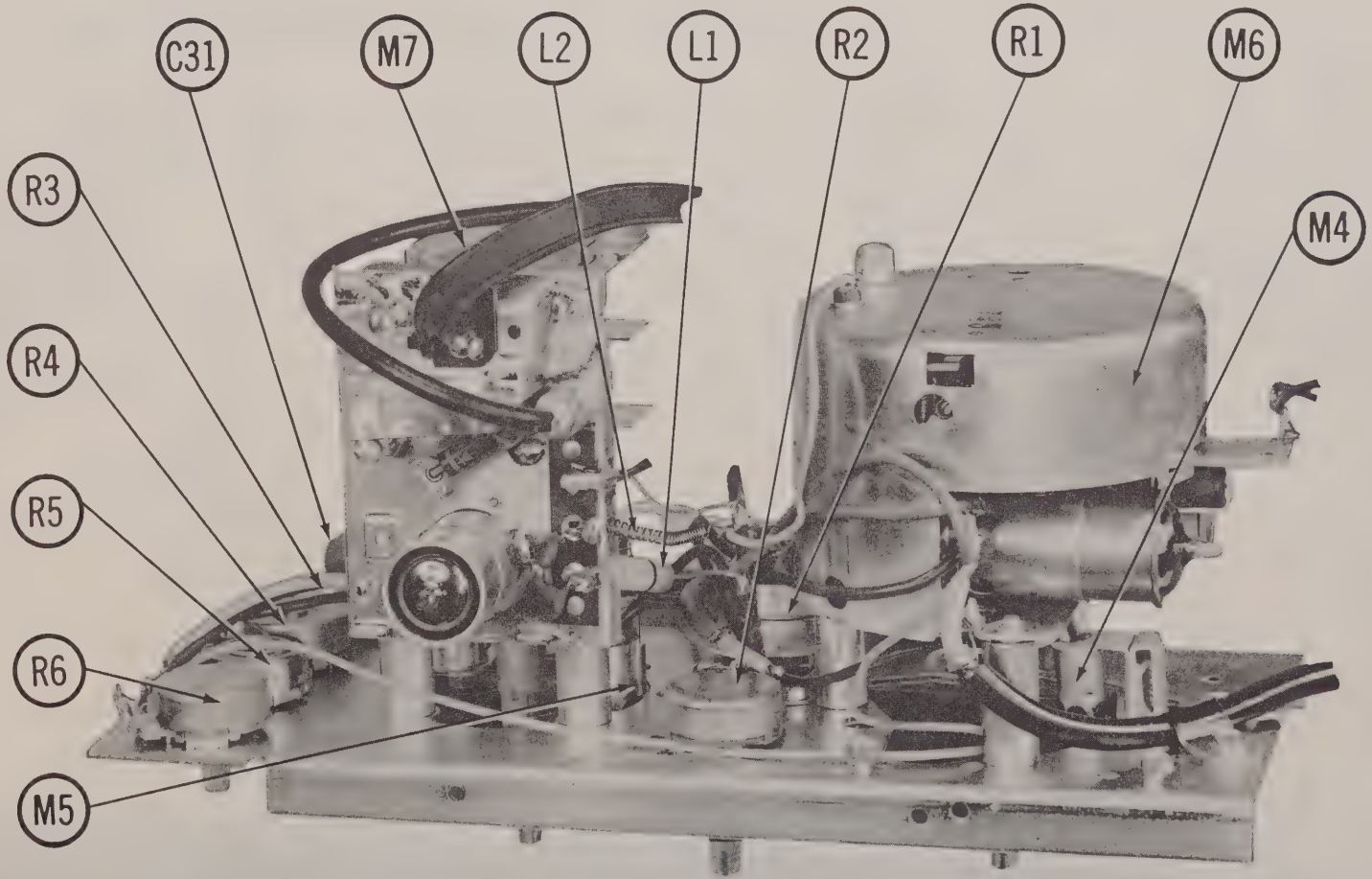
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M4	Lamp		Channel Indicator #47
M5	Lamp		Channel Indicator #47, UHF only
M6	Tuner	700627-1	UHF-VEF, Ch. U25-08AA, -09AA, -10AA, -11AA
	Tuner	700584-6	UHF-VEF, Ch. U/V25-01AA, -02AA, -03AA, -04AA, -05AA, -06AA, -07AA
	Tuner	700634-1	VHF, Ch. V25-08AA, -09AA, -10AA, -11AA
M7	Tuner	700530-3	UHF, Ch. U25-01AA thru U25-11AA
M8	Switch	160229-1	Phono-TV, Slide Type
M9	Centering Device	360738-1	Includes yoke rear cover
M10	Trap	360492-8	Swivels (UHF only)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. [illegible]
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8464 (Round) - 4 Conductor 8463 (Round) - 5 Conductor 8468 (Round) - 8 Conductor

MAGNAVOX CHASSIS U25-01AA through -11AA, V25-01AA through -11AA (25 Series)

FOLDER 2



TUNER & CONTROL BRACKET

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER #700584-6

Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point ⊕ . Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

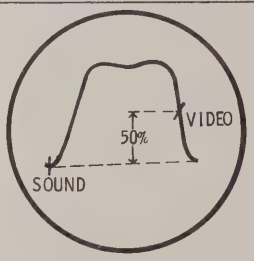
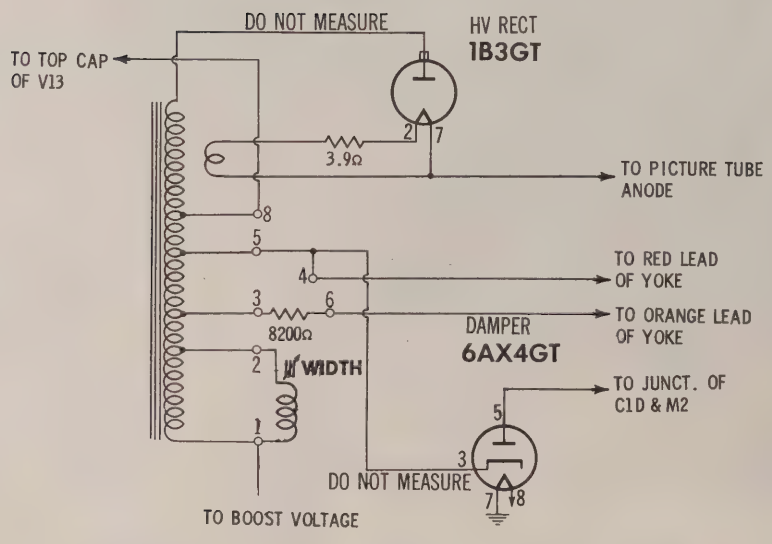


FIG. 201

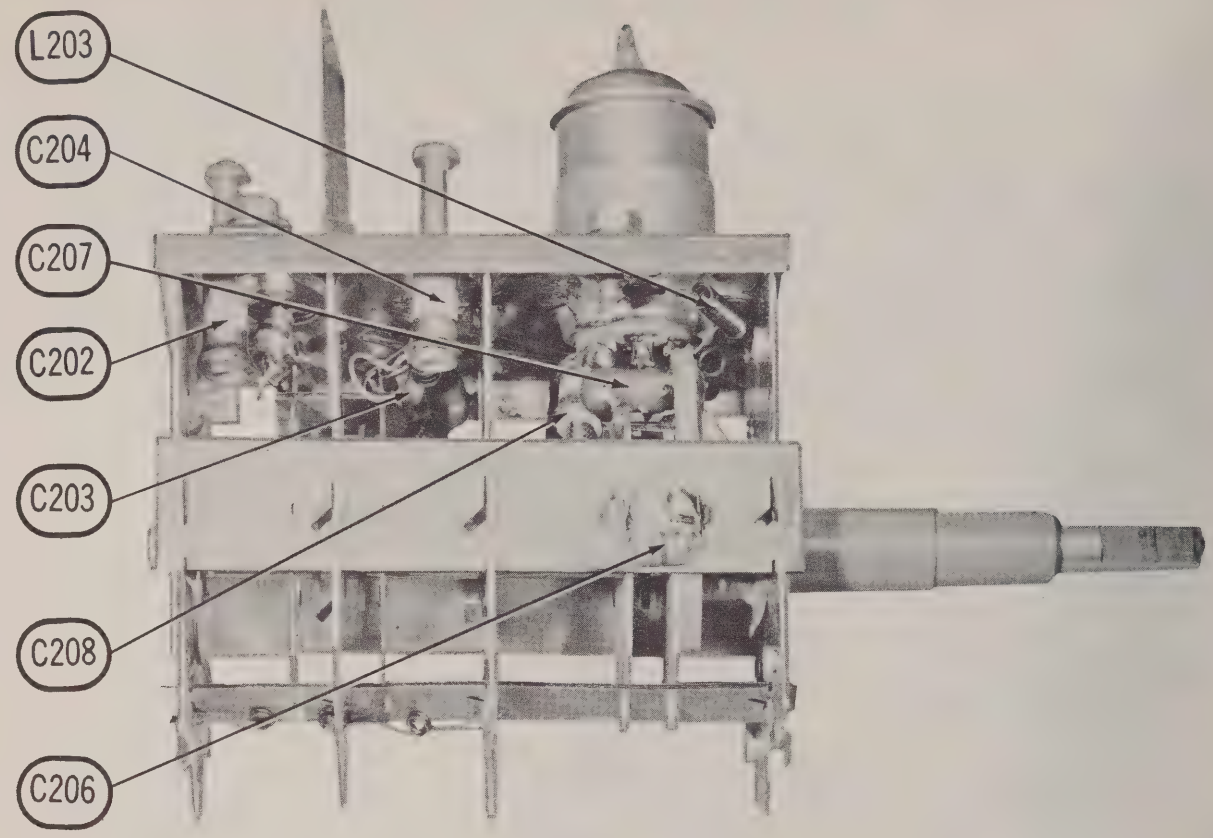


HORIZ OUTPUT TRANSFORMER PART #360700-1 USED IN SOME VERSIONS

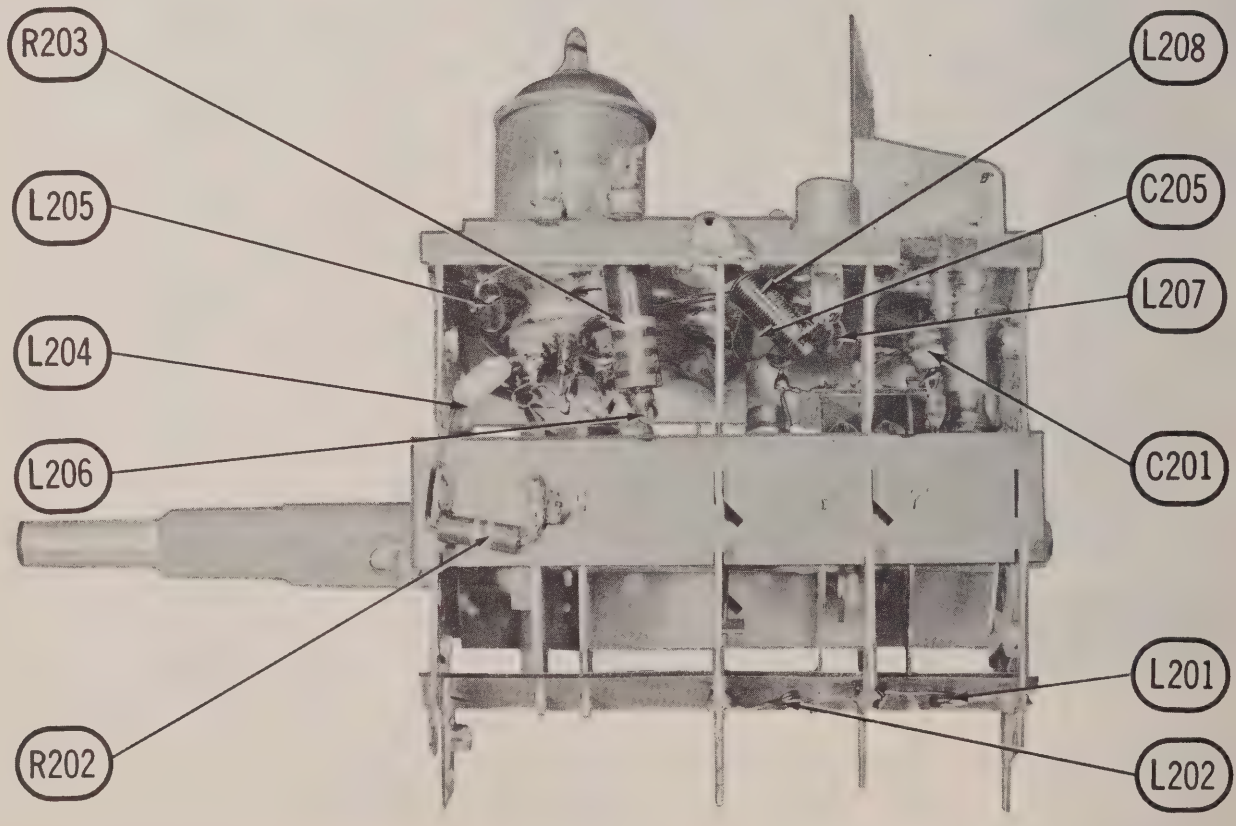
A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

ALTERNATE HORIZONTAL SWEEP CIRCUIT



UHF TUNER-LEFT SIDE



UHF TUNER-RIGHT SIDE

TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Connect bias as under "VHF Oscillator Alignment".
Set the Local-Distant switch to "Local" position and contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	1000Ω Carbon Resistor	High side to point (V). Low side to tuner chassis.	43.0MC (10MC Swp)	42.25MC 45.75MC	UHF	Vert. Amp. thru 10K across video detector load.	A228	Adjust for response curve similar to Fig. 205 with MINIMUM tilt.

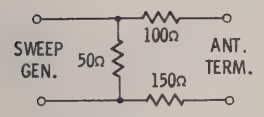


FIG 201

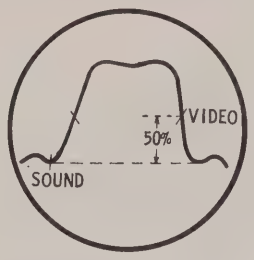


FIG. 202

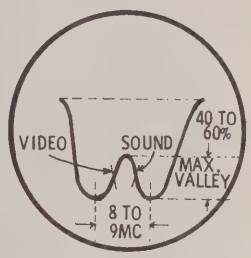


FIG. 203

FIG. 204

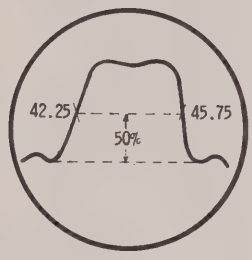
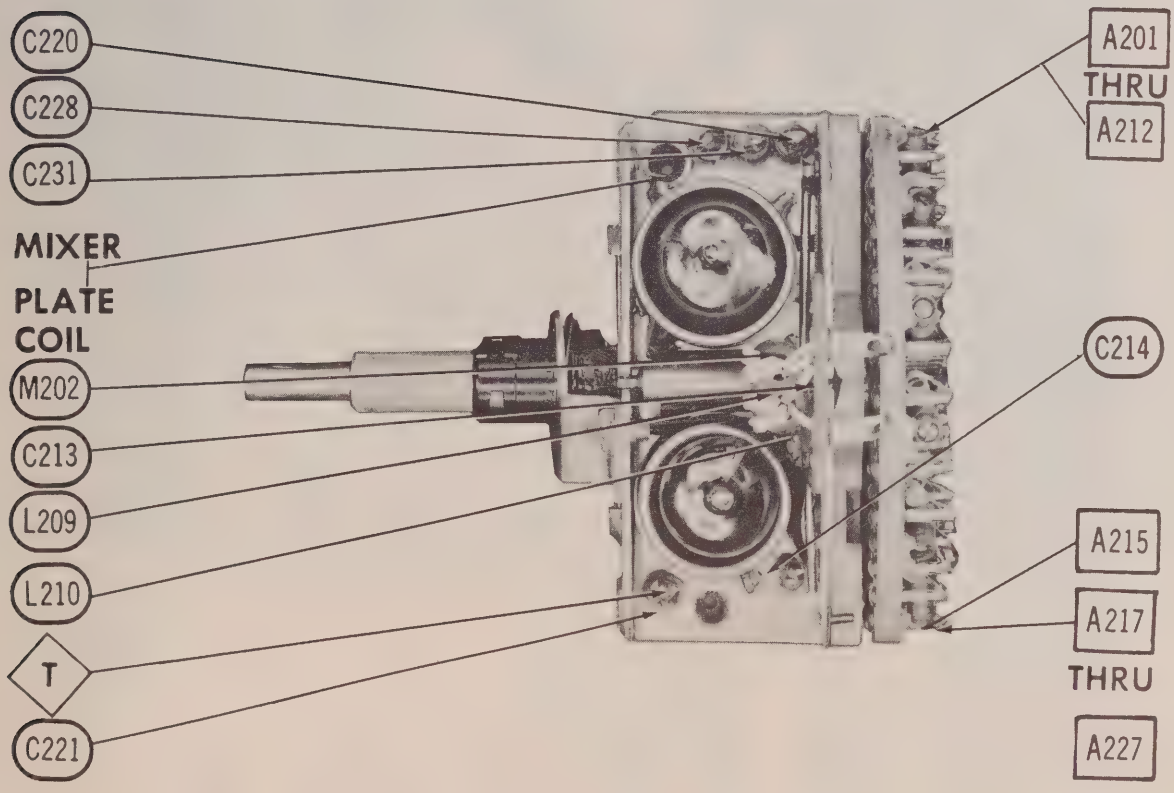


FIG. 205



RF TUNER—TOP VIEW

MAGNAVOX CHASSIS U25-01AA through -11AA, V25-01AA through -11AA (25 Series)

FOLDER 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BN4	
V202	Mixer-Osc.	6CG8A	

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	6AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	1.2		250221-115	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C202			250188-10							
C203	1.0		250221-114	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C204			250188-10							
C205	47		250175-21		TCN-47		TC7-47			N750 5%
C206	.62		250221-1001							5%
C207	10		250088-140							N1500 5%
C208	2.3-4		250220-2							
C209	470		250175-8	BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C210	470		250175-8	BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C211	1000		250272-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C212	800		250266-1							
C213	120		250262-1	BPD-00012	DD-121	L10T12	ED-120	UC-5312	5GA-T12	
C214	30		250263-1							
C215	15		250264-1	NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C216	15		250265-1		TCZ-15		TCO-15			5%
C217	5		250274-1		TCZ-4R7		TCO-5			NPO 5%
C218	2-8		260145-1							
C219	47		250273-1							
C220	800		250266-1							
C221	800		250266-1							
C222	2-6		260144-1							
C223	1000		250272-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C224	51		250267-1							N750
C225	2-6		260144-1							
C226	1.0		250268-1	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C227	1000		250271-1	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C228	30		250263-1							
C229	10		250270-1		TCN-10		TC7-10			N750 5%
C230	10		250269-1							N900
C231	800		250266-1							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R201	100K		230104-86	
R202	22K		230104-78	
R203	820Ω	1	230145-61	
R204	4700Ω		230104-70	
R205	470Ω	1	230105-62	Note 1
R206	10K		230104-74	

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R207	220K		230104-90	
R208	1000Ω		230104-62	
R209	10K		230104-74	
R210	10K		230104-74	
R211	5600Ω		230104-71	
R212	2200Ω		230104-66	

Note 1. VHF tuner #700624 uses 1000Ω 1W (Part #230105-62) in this application.

COILS (RF-IF)

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L201	RF Choke	360574-30	
L202	RF Choke	360574-30	
L203	Cathode Choke	360522-7	
L204	Fil. Choke	360574-8	
L205	Fil. Choke	360574-8	
L206	RF Choke	360574-8	
L207	RF Choke	360574-12	

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L208	RF Choke	360574-50	
L209	VHF Ant.Trans.	360744-1	
L210	IF Trap	360740-1	
L211	IF Trap	360741-1	
L212	Osc. Coil	360742-1	
L213	Mixer Plate Coil	360743-1	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MAGNAVOX PART No.	CBS PART No.	SYLVANIA PART No.	
M201		530036-1	1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M202	Ant. Network	460921-1	Includes L209, L210, C213
M203	Rotor Assy.	160283-1	Complete, includes shaft
M204	Rear Cover Assy.	635750-1	Includes coils, caps and contacts UHF-VHF tuner part #700627
	Rear Cover Assy.	635749-1	VHF tuner part #700624
	Extension Contact	635751-1	UHF connections on rotor
	Osc. Slug	110375-1	12 used
	Spring Contact	635748-1	Stator (7 used)

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	58K	47Ω	.1Ω	0Ω	▪ 1500Ω	▪ 1500Ω	0Ω		
V2	6BZ6	57K	47Ω	.1Ω	0Ω	▪ 1500Ω	▪ 1500Ω	0Ω		
V3	6CB6	.1Ω	120Ω	.1Ω	0Ω	▪ 1500Ω	▪ 1500Ω	0Ω		
V4	12BY7A	160Ω	3900Ω	0Ω	.1Ω	.1Ω	0Ω	† 5300Ω	▪ 11K	0Ω
V5	6AU6	† 20K	† 1000Ω	.1Ω	0Ω	350K	‡3300Ω	† 1000Ω		
V6	6AU6	1.2Ω	0Ω	.1Ω	0Ω	▪ 12K	▪ 12K	220Ω		
V7	6DT6	3.7Ω	680Ω	.1Ω	0Ω	† 270K	▪ 6800Ω	560K		
V8	6AT6	4.7meg	0Ω	0Ω	.1Ω	1.1meg	NC	† 330K		
V9	6DG6GT	TP	0Ω	† 390Ω	† 3500Ω	500K	TP	.1Ω	20K(MIN)	
V10	12AU7	† 1meg	4.7meg	0Ω	0Ω	0Ω	† 4000Ω	22K	3300Ω	.1Ω
V11	6CM7	‡5000Ω	NC	0Ω	0Ω	.1Ω	‡1.8meg	• 2.5meg	• 1.4meg	• 1800Ω
V12	6SN7GTB	500K	† 7500Ω	1300Ω	• 110K	† 120K	1300Ω	0Ω	.1Ω	
V13	6DQ6	NC	.1Ω	TP	† 8500Ω	470K	TP	0Ω	15Ω	TOP CAP ‡28Ω
V14	6AX4GT	TP	NC	¶ 370K	NC	† 0Ω	NC	0Ω	.1Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡383Ω
V16	5U4GB	NC	¶ 20K	TP	21Ω	NC	19Ω	TP	¶ 20K	
V17	21CBP4	0Ω	0Ω	Pin 6 ‡270K	Pin 10 †270K	Pin 11 • 290K	Pin 12 .1Ω			
V201	6BN4	0Ω	1.1meg	0Ω	.1Ω	▪ 470Ω	0Ω	1.1meg		
V202	6CG8A	10K	▪ 5600Ω	0Ω	0Ω	.1Ω	▪ 1000Ω	▪ 10K	0Ω	230K
V203	6AF4A	▪ *820Ω	*22K	.1Ω	.2Ω	*.1Ω	*22K	▪ *820Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING MAY VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

▪ MEASURED FROM 135V SOURCE.

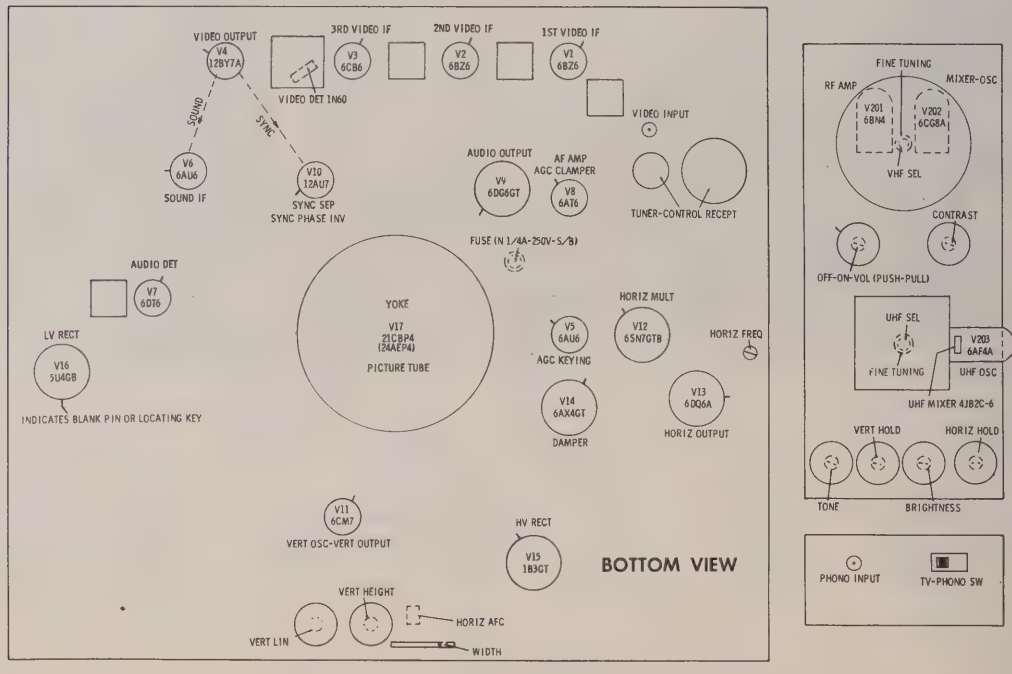
† MEASURED FROM 280V SOURCE.

‡ MEASURED FROM PIN 3 OF V14.

* MEASURED IN "UHF" POSITION.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART

SETCHELL-CARLSON MODEL P-63 (Ch. C-102)

SETCHELL-CARLSON MODEL P-63 (Ch. C-102)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the top.
2. Remove 6 metal screws holding the rear cover. Remove the rear cover.
3. Remove 4 chassis bolts from the bottom.
4. Remove the chassis.

SETCHELL-CARLSON MODEL P-63 (Ch. C-102)

TRADE NAME	Setchell-Carlson Model P-63 (Ch. C-102)
MANUFACTURER	Setchell-Carlson Inc., New Brighton, Minn.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 120 Watts, 1.19 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 1 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 6 metal screws from the front cover. Remove the front and glass.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Adjust Horizontal Hold until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the Ratio Detector secondary (All) located on top of chassis.

FUSES

One fuse is used for LV power supply protection. (For location, see tube placement chart.)

CENTERING

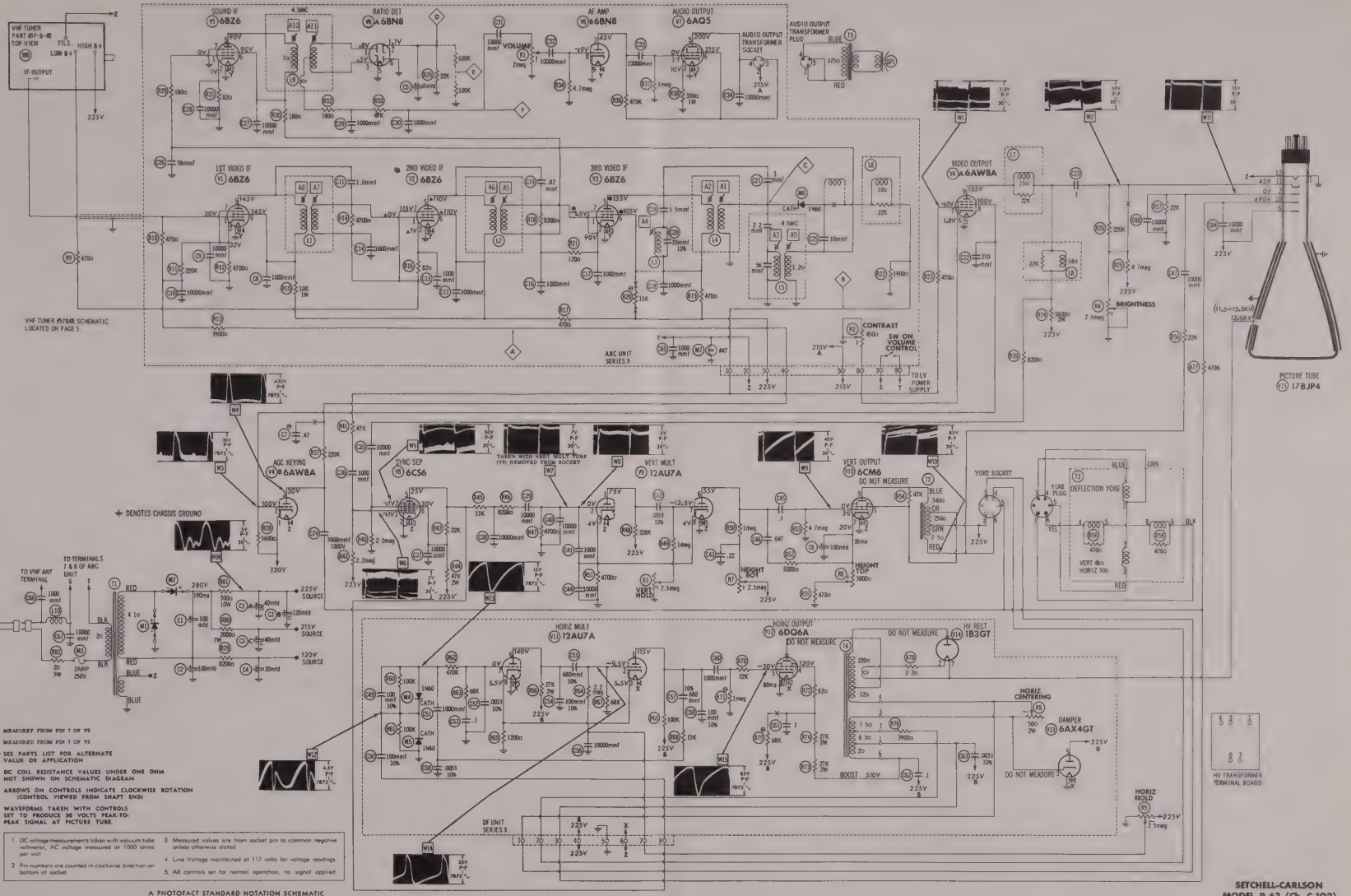
Centering is accomplished electrically. Adjust the Horizontal Centering control until picture is properly centered. (For location, see tube placement chart.)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H507

SET 402 FOLDER 3



▲ MEASURED FROM PIN 7 OF V3

● MEASURED FROM PIN 7 OF V3

◉ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

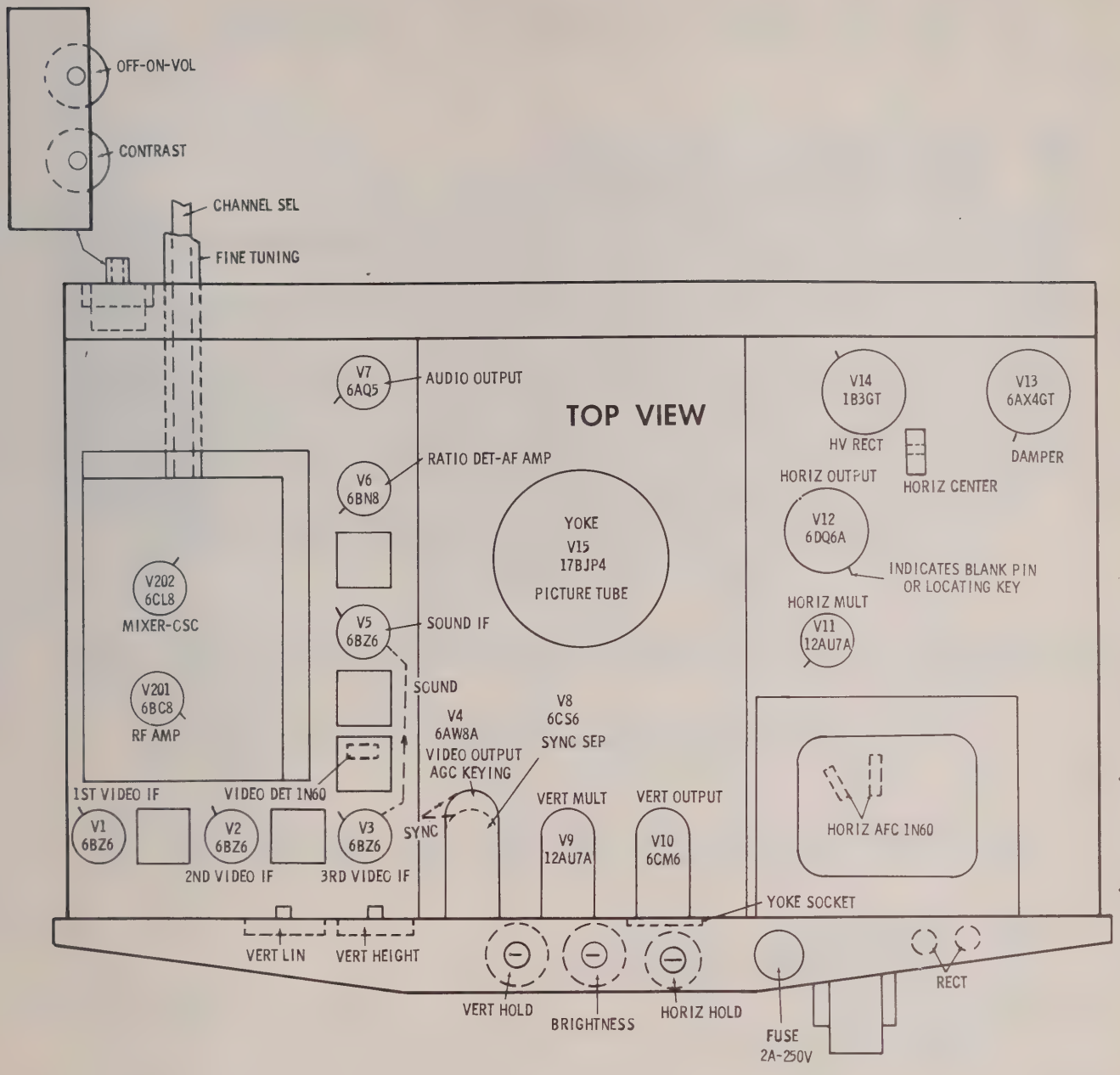
3 Measured values are from socket pin to common negative unless otherwise stated

4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUBE PLACEMENT CHART



SETCHELL-CARLSON
MODEL P-63 (Ch. C-102)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

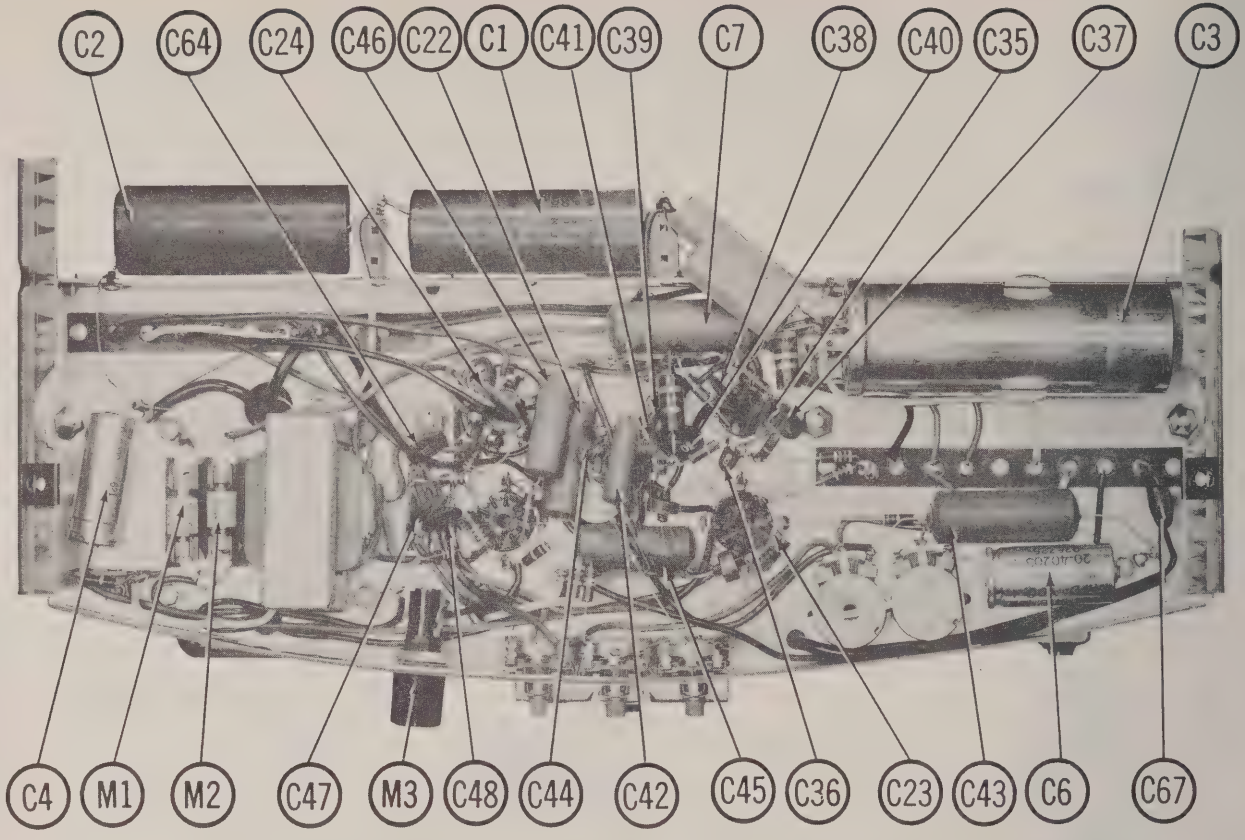
POWER SUPPLY FAILURE
No raster, no sound Fuse (M3), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound Rectifiers (M5, M6), V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, M1, M2
Vert. off freq. V9
Horiz. off freq. V11

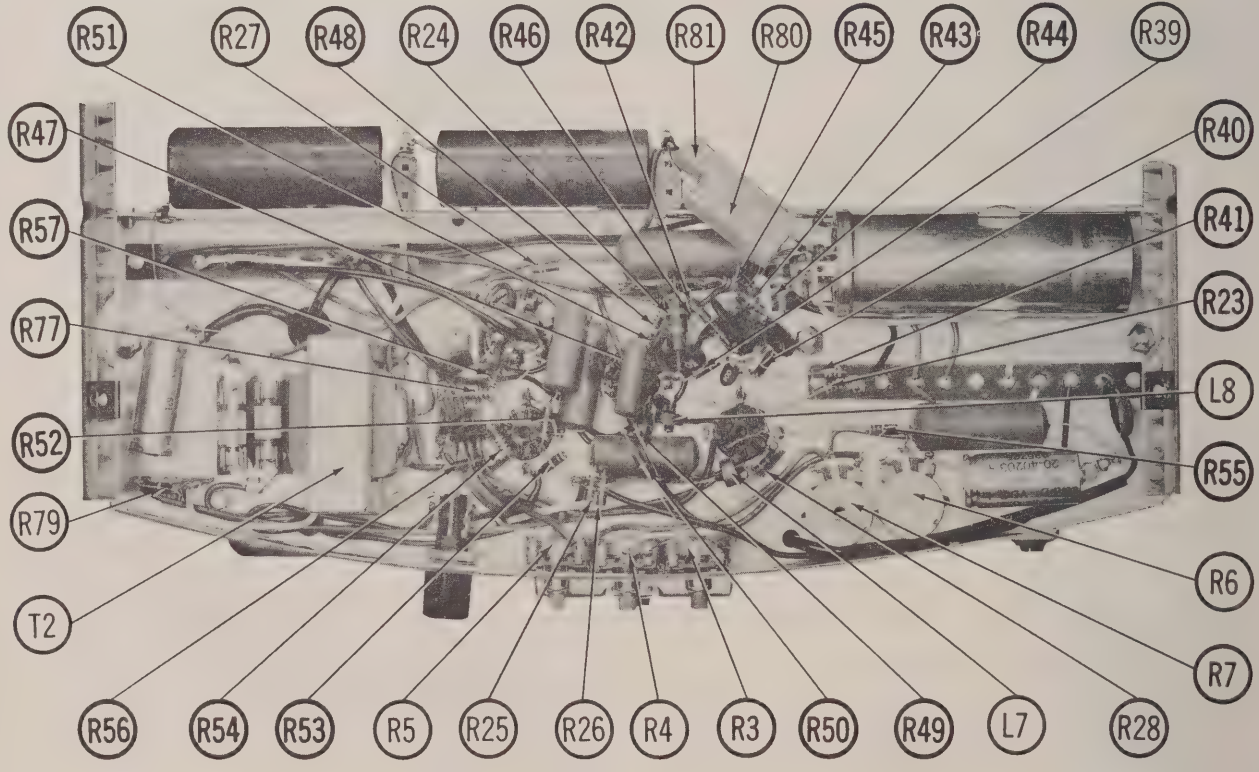
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M4)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, M5, M6
No vert. or horiz. sync V8

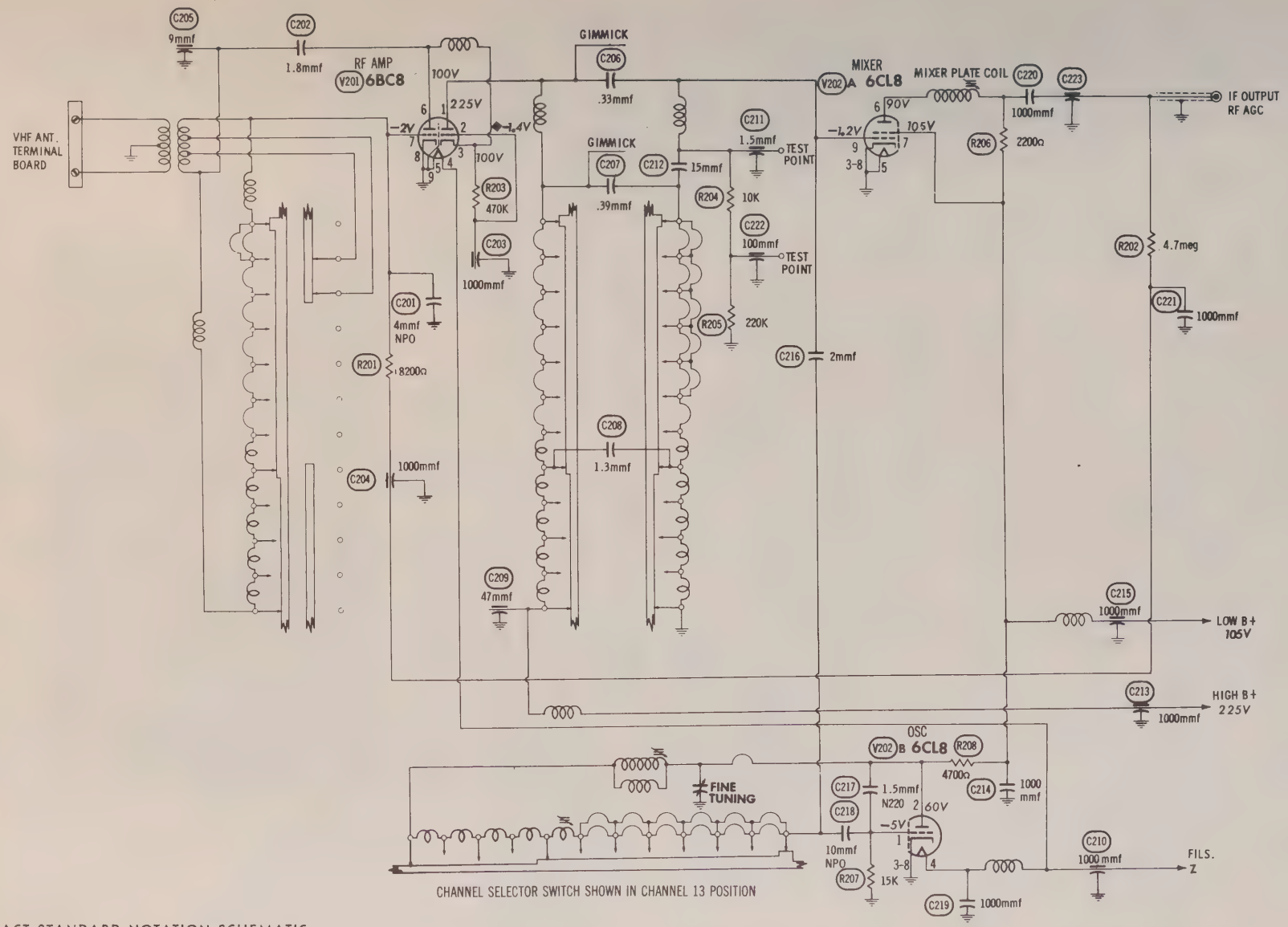
FOLDER 3



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER # 57B48

SETCHELL-CARLSON MODEL P-63 (Ch. C-102)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BC8	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Setchell-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	4					C10V4C				NPO
C202	1.8									
C203	1000			EF-001	MFT-1000				503C-D1	
C204	1000			EF-001	MFT-1000				503C-D1	
C205	9									
C206	.33									
C207	.39									
C208	1.3									
C209	47									
C210	1000			EF-001	MFT-1000				503C-D1	
C211	1.5									
C212	15			BPD-000015	DD-150	L10Q15	ED-15	UC-5415	5GA-Q15	
C213	1000			EF-001	MFT-1000				503C-D1	
C214	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C215	1000			EF-001	MFT-1000				503C-D1	
C216	2					C10V2C				
C217	1.5									N220
C218	10			NPO-SI 10	TCZ-10	CTA6Q1C	TCO-10	ZT-541	5TCC-Q1	NPO
C219	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C220	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C221	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C222	100			EF-0001	MFT-100				503C-T1	
C223										

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Setchell-Carlson PART No.	NOTES
	OHMS	WATT		
R201	8200Ω			
R202	4.7meg			
R203	470K			
R204	10K			

ITEM No.	RATING		Setchell-Carlson PART No.	NOTES
	OHMS	WATT		
R205	220K			
R206	2200Ω			
R207	15K			
R208	4700Ω			

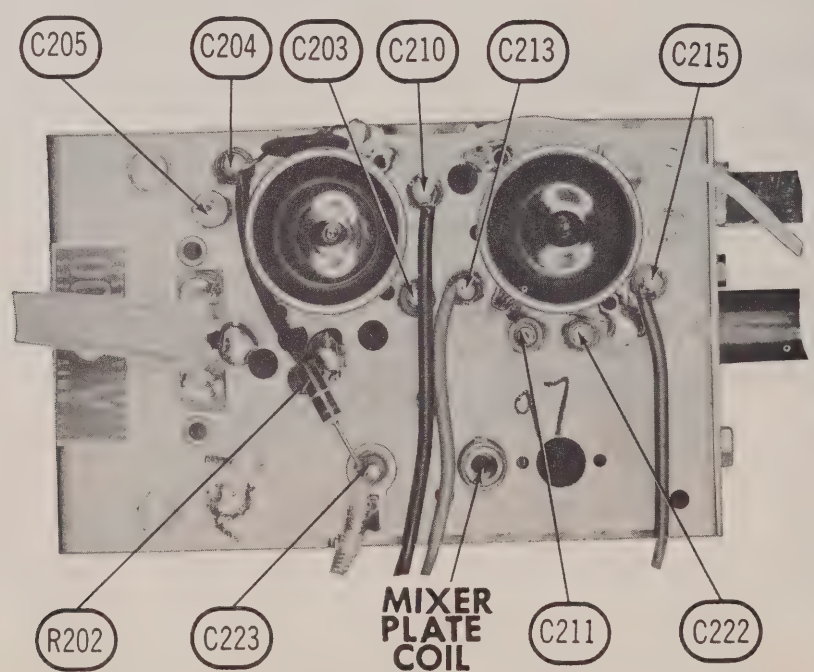
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 1 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



RF TUNER—TOP VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 6BZ6 (V3). Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. Load)	A1, A2, A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A3 to place 47.25MC marker in one trap notch and A4 to place 41.25MC marker in other trap notch.
2.	"	High side to pin 1 (grid) of 6BZ6 (V2). Low side to chassis.	"	41.25MC 45.75MC	"	"	A5, A6	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
3.	"	High side to pin 1 (grid) of 6BZ6 (V1). Low side to chassis.	"	"	"	"	A7, A8	"
4.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Repeat steps 1 thru 4, if necessary.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓓ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001mfd	High side to point Ⓒ. Low side to chassis.	4.5MC	Any non-interfering channel	DC probe to point Ⓓ. Common to chassis.	A9, A10	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point Ⓔ. Common to chassis.	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

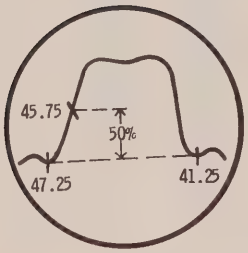


FIG. 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	6BZ6	
V2	2nd. Video IF Amp.	6BZ6	
V3	3rd. Video IF Amp.	6BZ6	
V4	Video Output-AGC Keying	6AW8A	
V5	Sound IF Amp	6BZ6	
V6	Ratio Det -AF Amp.	6BN6	
V7	Audio Output	6AQ6	
V8	Sync Sep.	6CS6	
V9	Vert Mult.	12AU7A	
V10	Vert. Output	6CM6	
V11	Horiz. Mult.	12AU7A	
V12	Horiz Output	6DQ6A	
V13	Damper	5AX4GT	
V14	HV Rect	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Setchell-Carlson PART No.	GENERAL ELECTRIC PART No.	RCA PART No	SYLVANIA PART No.	NOTES
V15	17BJP4		17BJP4 ①	17BJP4 ②	① "Silverama" ③ ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.
C1	100	200		PRS250V100	BRI0035	TCI265	TD-100-200	MT-25100	RJ803 *
C2	100	400		PRS250V100	BRI0035	TCI265	TD-100-200	MT-25100	RJ803 *
C3A	440	350	C-101	AFH3-29-95	D0044	FP375.5	TMD-91	Q-012	RJ247 *
B	40	350			BR4035	TC78	TD-40-350	MT-4540	
C	440	350							
C4	40	150		PRS150V20	BBR20-150	TC45	TD-20-150	MT-1520	TVA-1410
C5	5	150		PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1403
C6	100	50		PRS50V100	[illegible]	TC350I	TD-100-50	MT-5010	TVA-1310

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7	47	200		P288N-47		CUB2P47	GEM-3047	3TM-P47	①
C8	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C9	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C10	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C11	1.0			NPO-SI 1.0	TCZ-1			5TCCB-V1	
C12	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C13	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C14	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C15	82								
C16	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C17	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C18	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C19	1.5			NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-4515	5TCCB-V15	
C20	70								10%
C21	1.0			NPO-SI 1.0	TCZ-1			5TCCB-V1	
C22	270			1468-00027	DE-471	5W5727	UC-5327	1FM-327	
C23	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C24	5000	1000		DAC-9	MD-502	BYA10D5		5GA-D5	
C25	10			SI 10	DE-100	L75Q	UC-541	5GA-Q5	
C26	56			1468-00056	D6-560	5W5Q56	UC-5456	1FM-456	
C27	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C28	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C29	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C30	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C31	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C32	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C33	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C34	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C35	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C36	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C37	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C38	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C39	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C40	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C41	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C42	.0033	400					GEM-16433		10%
C43	.22	400		P488N-22		CUB4P22	GEM-4022	4TM-P22	
C44	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C45	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C46	.047	400		P488N-047	DF-503	CUB4S47	GEM-4047	4TM-S47	
C47	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C48	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C49	100			1469-0001	DD-101	22R5T1	MCB331	MS-SI	10%
C50	100			1469-0001	DD-101	22R5T1	MCB331	MS-SI	10%
C51	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C52	.0033	400					GEM-16233		10%
C53	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C54	100			1469-0001	DD-101	22R5T1	MCB331	MS-SI	10%
C55	680			1464-00068	D6-681	5R5T68		MS-368	10%
C56	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C57	680			1464-00068	D6-681	5R5T68		MS-368	10%
C58	.0033	400					GEM-16233		10%
C59	100			1469-0001	DD-101	22R5T1	MCB331	MS-SI	10%
C60	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C61	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C62	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C63	.0033	400					GEM-16433		10%
C64	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	
C65	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C66	1000			BPD-001	DD-102	BYA6D1	DC5I1	5HK-DI	
C67	10000			BPD-01	DD-103	BYA6S1	DC5II	5HK-SI	

① Not used in some versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Setchell-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	VR-808	B-78	A47-2meg-Z	QJ5-139	U55	Volume
B	Shaft			Not Req.	FS-2	Not Req.	Not Req.	
C	Switch			KR-1 or KR-1*	SWE-13	78-1	U5-36	
R2A	450Ω	½	VR-809	E-4	A47-500-S	QJ1-103	U2	Contrast
B	Shaft			Not Req.	FS-2	Not Req.	Not Req.	
R3A	2.5meg	½	VR-803	BX-83	A47-2.5meg -S	Bil-339	SU-586	Vert. Hold
B	Shaft			Not Req.	FKS-1/4	SK3	Not Req.	
R4A	2.5meg	½	VR-803	BX-83	A47-2.5meg -S	Bil-339	SU-586	Brightness
B	Shaft			Not Req.	FKS-1/4	SK3	Not Req.	
R5A	2.5meg	½	VR-803	BX-83	A47-2.5meg -S	Bil-339	SU-586	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	SK3	Not Req.	
R6A	3000Ω	½	VR-801	AB-83	A47-3000-S	Bil-112	SU-8	Height Top
B	Shaft			AK-1	FKS-1/4	SK3	Not Req.	
R7A	2.5meg	½	VR-803	BX-83	A47-2.5meg -S	Bil-339	SU-586	Height Bottom
B	Shaft			Not Req.	FKS-1/4	SK3	Not Req.	
R8	50Ω	2(WW)	VR-813					Horiz. Centering

* Use KR with CRL "red label" and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	Setchell-Carlson PART No.	NOTES
R9	470Ω			
R10	470Ω			
R11	220K			
R12	4700Ω			
R13	3900Ω			
R14	4700Ω			
R15	10K	1		
R16	82Ω			
R17	470Ω			
R18	6200Ω			
R19	470Ω			
R20	15K			Note 1
R21	12Ω			
R22	3900Ω			
R23	470Ω			
R24	5600Ω	2		
R25	4.7meg			
R26	220K			
R27	220K			
R28	5800Ω			
R29	180Ω			
R30	180Ω			
R31	82Ω			
R32	180Ω			
R33	47K			
R34	4.7meg			
R35	22K			
R36	470K			
R37	1meg			
R38	330Ω	1		
R39	8200Ω			
R40	2.2meg			
R41	47K			
R42	2.2meg			
R43	22K			
R44	47K	2		
R45	33K			
R46	8200Ω			
R47	4700Ω			
R48	220K			
R49	1meg			
R50	1meg			
R51	4700Ω			
R52	8200Ω			
R53	4.7meg			
R54	47K			
R55	470Ω			
R56	22K			
R57	22K			
R58	470Ω			
R59	470Ω			
R60	100K			
R61	100K			
R62	470K			
R63	68K			
R64	2.2meg			
R65	100K			
R66	27K	4		
R67	68K			
R68	15K			
R69	1200Ω			
R70	22K			
R71	1meg			Note 2
R72	82Ω			
R73	47K	2		
R74	27K	2		
R75	68K			Note 1
R76	3900Ω			
R77	470K			
R78	3.2Ω			
R79	8200Ω			
R80	2000Ω	7		
R81	3000	10		
R82	2Ω	5	R-105	

Note 1. Not used in some versions.
Note 2. Some versions may use 2.2meg in this application.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ①1.19A	105VAC ②.330A	6.3VAC ②8.5A	T-125						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: Setchell-Carlson PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T2	Vert. Output	T-101		A-3038 ①	Y309 ①	VO-100 ②	26S13 ②		
T3A	Yoke-Horiz (20MH)	Y-104 ③	DF607	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°)-Vert. (40MH)		④⑤	④⑥	④⑤	④⑤	④⑤	NW20 ④	
M9	Rear Cover & Centering Device	Y-105							
	Yoke Clamp	Y-106							
T4	Horiz. Output	T-122							

① Connect as autoformer (red to yellow). Connect red and yellow leads to pin 8 of yoke socket. Green lead to pin 1 of yoke socket and pin 1 of vert. output tube (V10).
② Drill new mounting hole(s).
③ Does not include leads, damping network or rear cover and centering device.
④ Use original rear cover and centering device, mount with lead out top and connect same as original.
⑤ Use original yoke damping network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5100Ω	3-4Ω	T-102	Z1001	A-2930		A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Setchell-Carlson PART No.	QUAM PART No	NOTES
SP1	8"	PM	3-4Ω	W-100	6AL5	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st. Video IF	T-126					
L2	2nd. Video IF	T-126					
L3	41.25MC Trap	T-131					
L4	3rd. Video IF	T-129					
L5A	47.25MC Trap	T-127					
B	Sound IF						
L6	Series Peaking Coil	L-101	19-4380	TV-187	6173	VP-8 *	225 Microhenries, wound on a 22K resistor
L7	Series Peaking Coil	L-110	19-4400 *	TV-402*	6136 *		400 Microhenries, wound on a 22K resistor
L8	Shunt Peaking Coil	L-102	19-3300 *	TV-199 *	6155 *		300 Microhenries, wound on a 22K resistor
L9	Ratio Det.	T-104	17-3497	TV-115	6305	SD-4	1.5 Microhenries
L10	Line Choke						

* Parallel with a 22K resistor.

RECTIFIERS

ITEM No	RATING: CURRENT (Measured)	REPLACEMENT DATA: Setchell-Carlson PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	190A			1N1005 ①	SD94A	M500 ②	① Germanium type.
M2	190A			1N1005 ①	SD94A	M500 ②	② Silicon type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Setchell-Carlson PART No. FUSE	Setchell-Carlson PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	2A 250V			312002. (3AG-2A-250V)	342008	AGCI	HKP-CC

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Setchell-Carlson PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M4	1N60		1N60	1N60	Video Det. (Pigtail)
M5	1N60		1N60	1N60	Horiz. AFC (Pigtail)
M6	1N60		1N60	1N60	Horiz. AFC (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Setchell-Carlson PART No.	NOTES
M7	Lamp	57-B-48	#47
M8	Tuner	Y-105	VHF
M9	Centering Device		Includes yoke rear cover

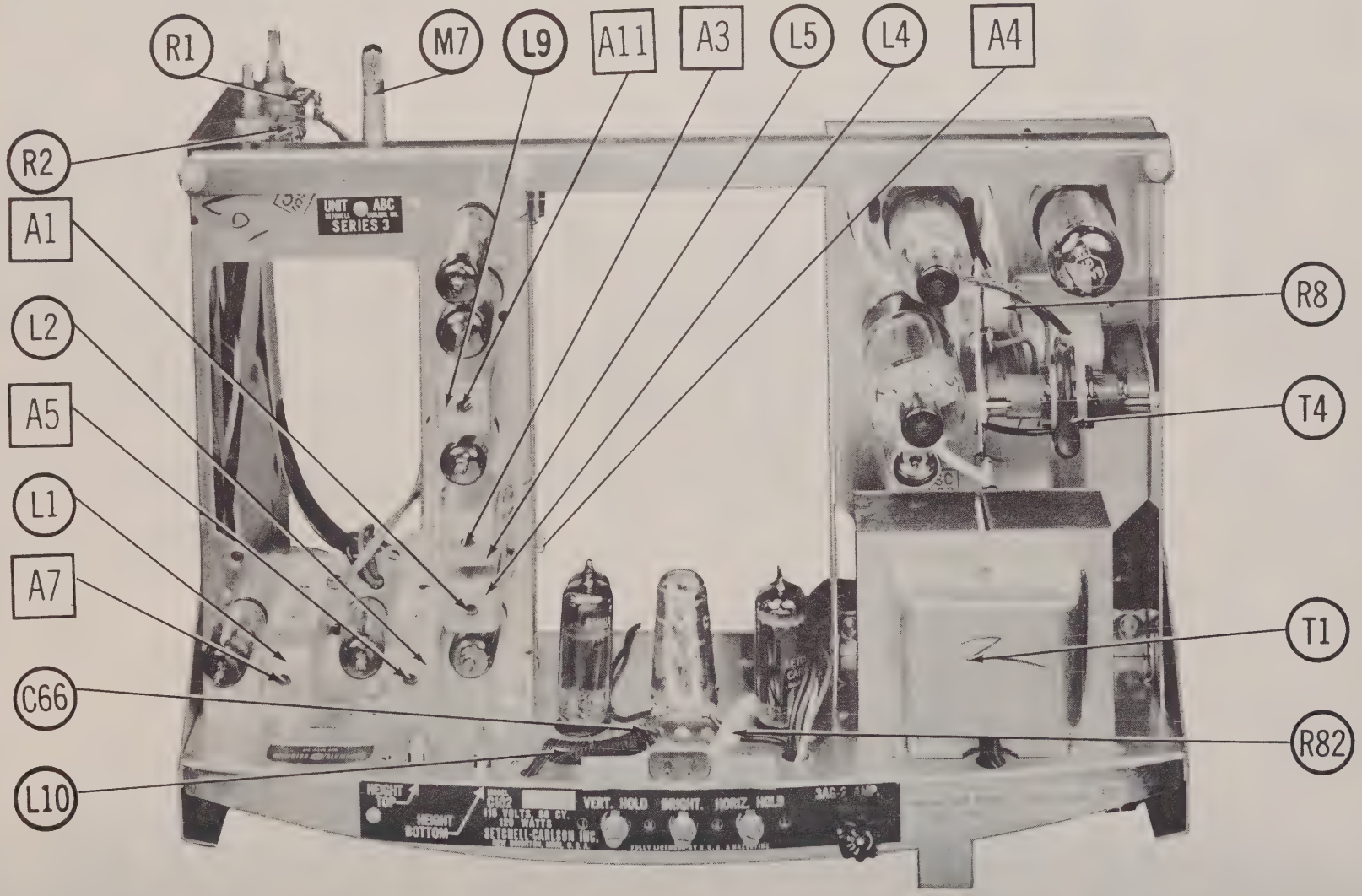
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

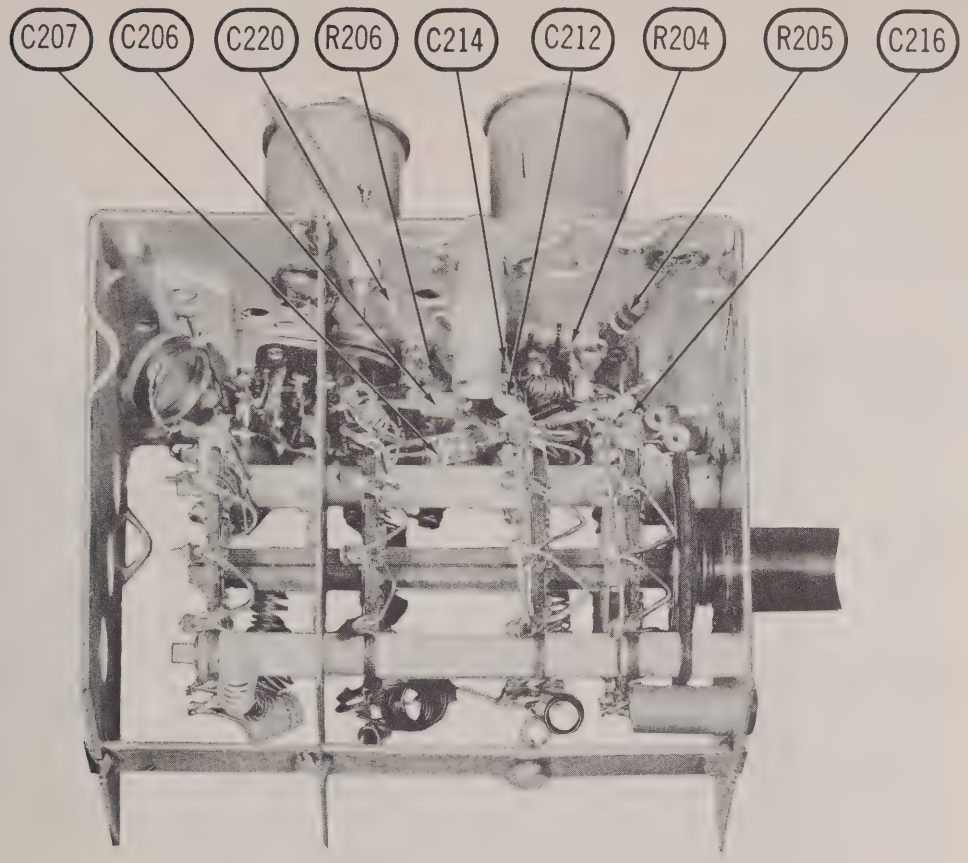
NAME	PART NO	DESCRIPTION
Safety Glass	GM-100	
Knob	K-102	Volume, Contrast
Knob	K-133	Channel Selector
Knob	K-137	Channel Selector, UHF-VHF Models
Dial	K-130	Rim, Fine Tuning, Contrast
Dial	K-135	Rim, Fine Tuning, UHF-VHF Models
Dial	K-134	Rim, Calibraied UHF, UHF-VHF Models

WIRING DATA

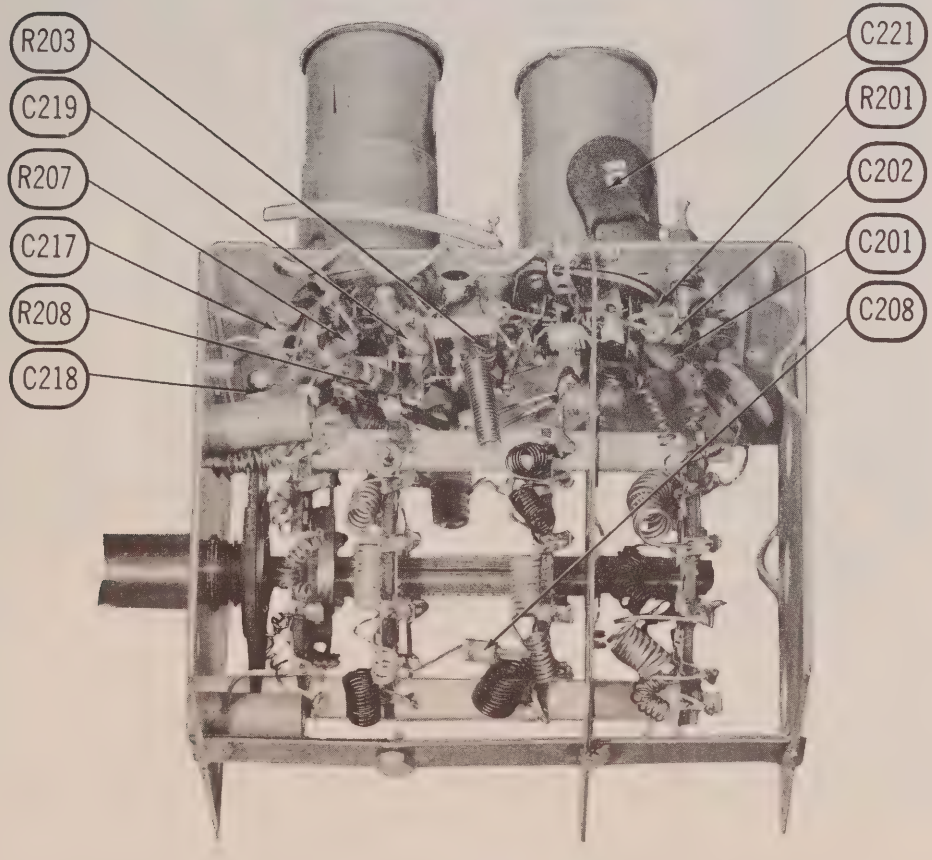
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8585 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8674
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8276
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor



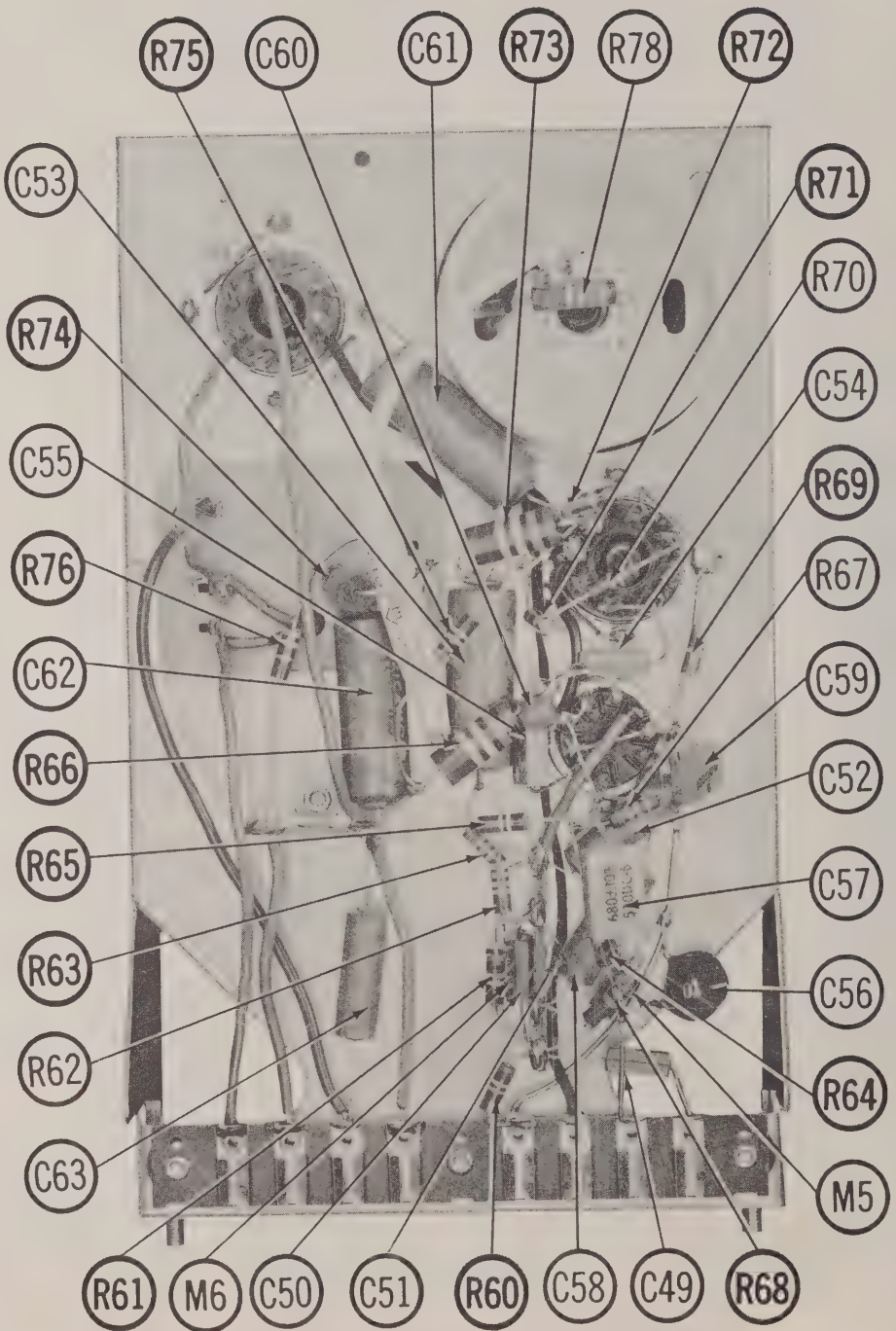
CHASSIS TOP VIEW



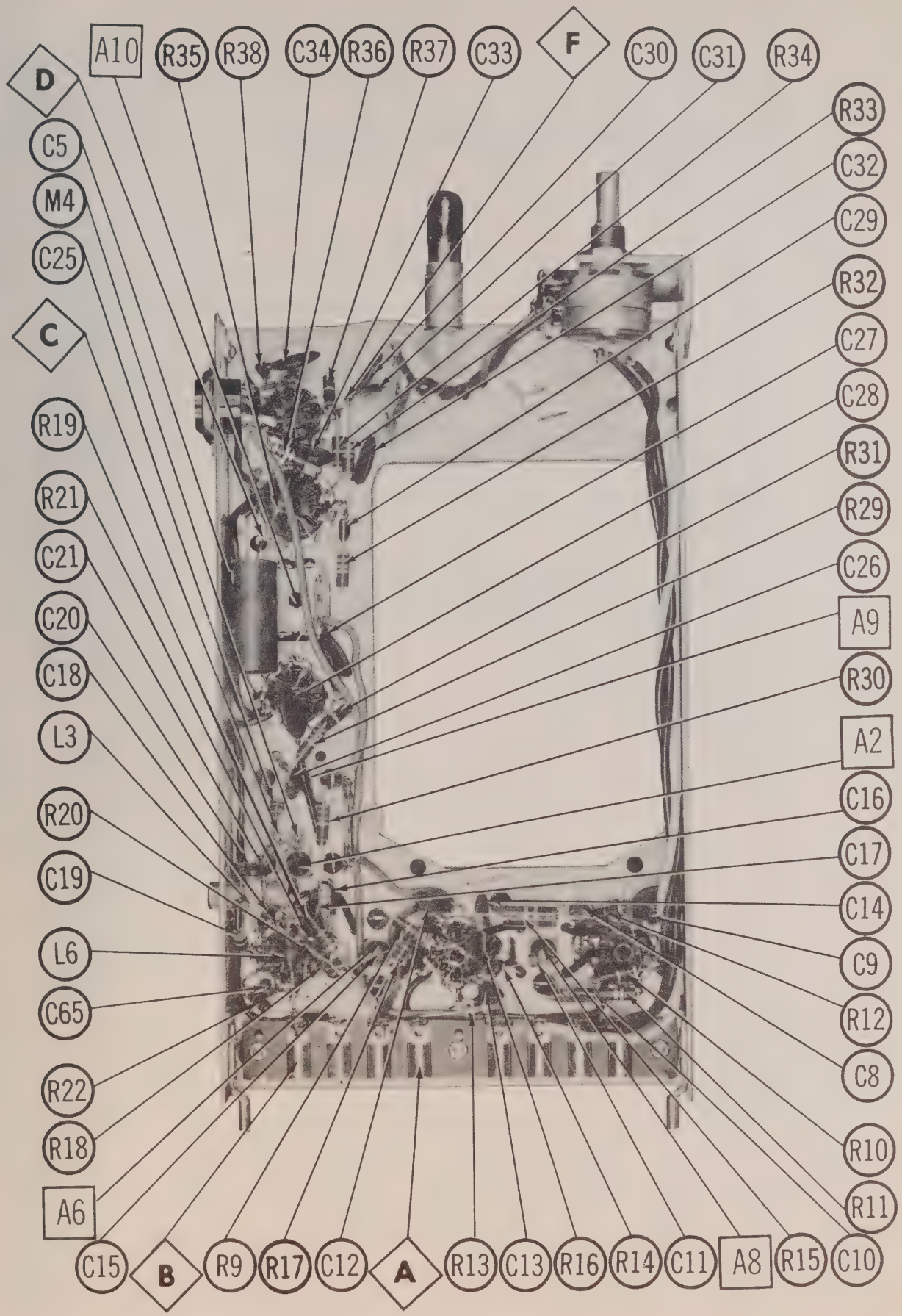
RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



HORIZ SUB CHASSIS

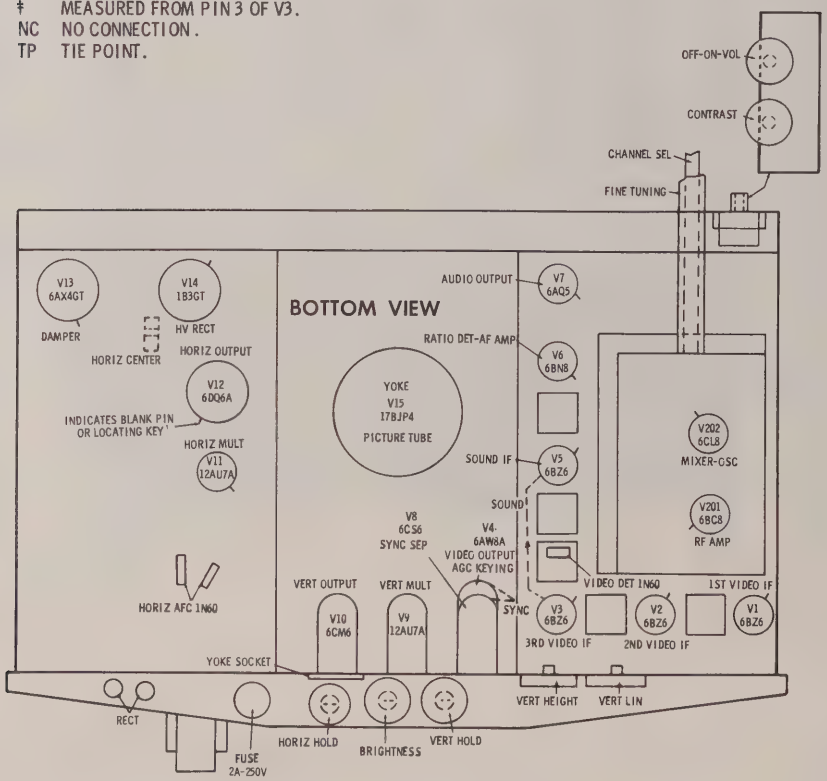


IF SUB CHASSIS

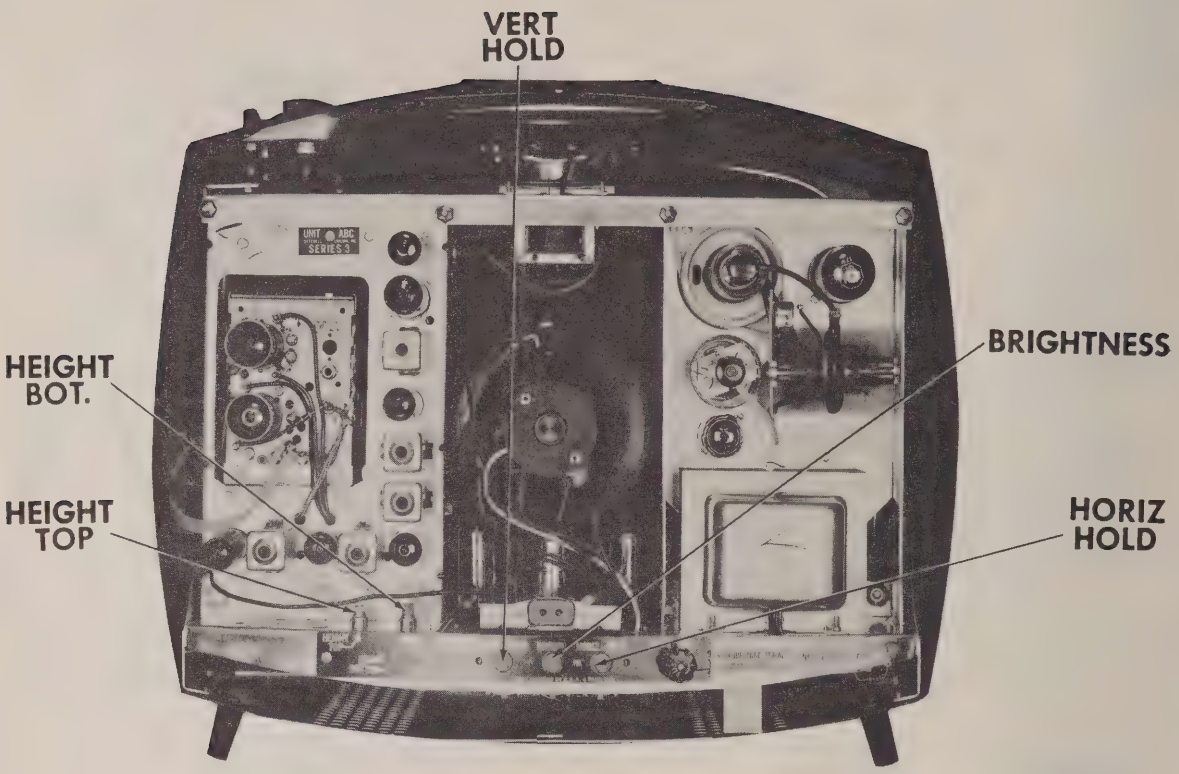
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	220K	4700Ω	0Ω	.1Ω	†10K	†10K	4700Ω		
V2	6BZ6	▲ .1Ω	▲ 82Ω	0Ω	.1Ω	†770Ω	†770Ω	INF		
V3	6BZ6	▲ 120Ω	INF	.1Ω	0Ω	†770Ω	†15K	INF		
V4	6AW8A	†† 0Ω	†† 5600Ω	440K	.1Ω	0Ω	• 95Ω	4400Ω	†† 5600Ω	† 5900Ω
V5	6BZ6	180Ω	82Ω	.1Ω	0Ω	▲ 300Ω	▲ 300Ω	0Ω		
V6	6BN8	INF	22Ω	INF	.1Ω	0Ω	0Ω	† 470K	4.7meg	0Ω
V7	6AQ5	1meg	330Ω	.1Ω	0Ω	† 2400Ω	† 2000Ω	1meg		
V8	6CS6	† 2.2meg	0Ω	.1Ω	0Ω	† 69K	† 47K	2.2meg		
V9	12AU7A	† 220K	4700Ω	4700Ω	.1Ω	.1Ω	• † 1.8meg	• 1.6meg	4700Ω	0Ω
V10	6CM6	† 550Ω	NC	4.7meg	0Ω	.1Ω	4.7meg	• 900Ω	NC	† 890Ω
V11	12AU7A	† 100K	68K	1200Ω	.1Ω	.1Ω	† 27K	520K	1200Ω	0Ω
V12	6DQ6A	NC	.1Ω	TP	† 68K	1meg	NC	0Ω	0Ω	TOP CAP ‡ 23Ω
V13	6AX4GT	NC	NC	¶ 250K	NC	† 300Ω	NC	0Ω	.1Ω	
V14	1B3GT		PINS	1 THRU 8	HAVE INFINITE RESISTANCE					TOP CAP ‡ 245Ω
V15	17BJP4	0Ω	22K	Pin 6 † 300Ω	Pin 10 ‡ 470K	Pin 11 • 500K	Pin 12 .1Ω			
V201	6BC8	† 300Ω	INF	INF	.1Ω	0Ω	INF	5meg	0Ω	0Ω
V202	6CL8	15K	▲ 5200Ω	0Ω	.1Ω	0Ω	▲ 470Ω	▲ 2700Ω	0Ω	230K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING MAY VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
▲ MEASURED FROM PIN 7 OF V3.
† MEASURED FROM OUTPUT OF M2.
†† MEASURED FROM 120V SOURCE.
‡ MEASURED FROM PIN 3 OF V3.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the Horizontal Hold control until the picture synchronizes horizontally. If the control must be turned to either extreme to sync the picture, or if slow warm-up causes frequency drift, replace the 12AU7A (V11) and readjust the Horizontal Hold control.

TRUETONE MODELS 2D1834A, 2D1835A, 2D1836A, 2D1837A

TRUETONE MODELS 2D1834A, 2D1835A, 2D1836A, 2D1837A

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front. Remove 2 wood screws holding the knob escutcheon. Remove the escutcheon and 4 remaining knobs.
2. Remove 6 wood screws from the rear cover. Remove the rear cover.
3. Loosen 2 wood screws and remove the antenna terminal board.
4. Remove 2 wood screws from the top chassis braces.
5. Remove 4 chassis bolts from the bottom.
6. Remove the speaker leads.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Truetone MODELS 2D1834A, 2D1835A, 2D1836A, 2D1837A
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim at the top edge of the safety glass. Tilt glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. Range
Turn range control fully counter clockwise, then clockwise for best picture and MINIMUM snow without distortion or overload.

B. Focus
Adjust the beam alignment magnet on the neck of the picture tube for best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button.

CENTERING

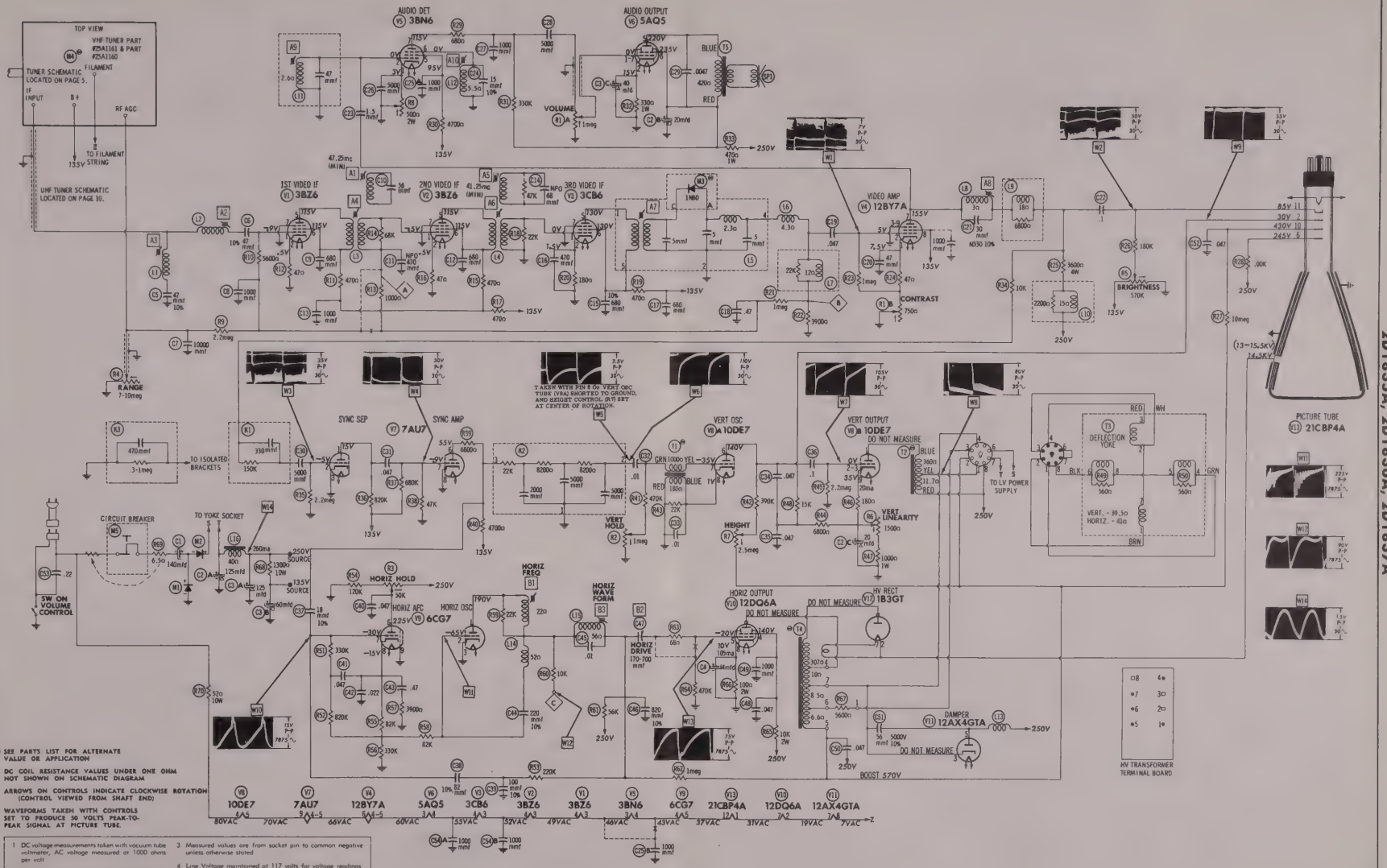
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H414R

SET 402 FOLDER 4



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

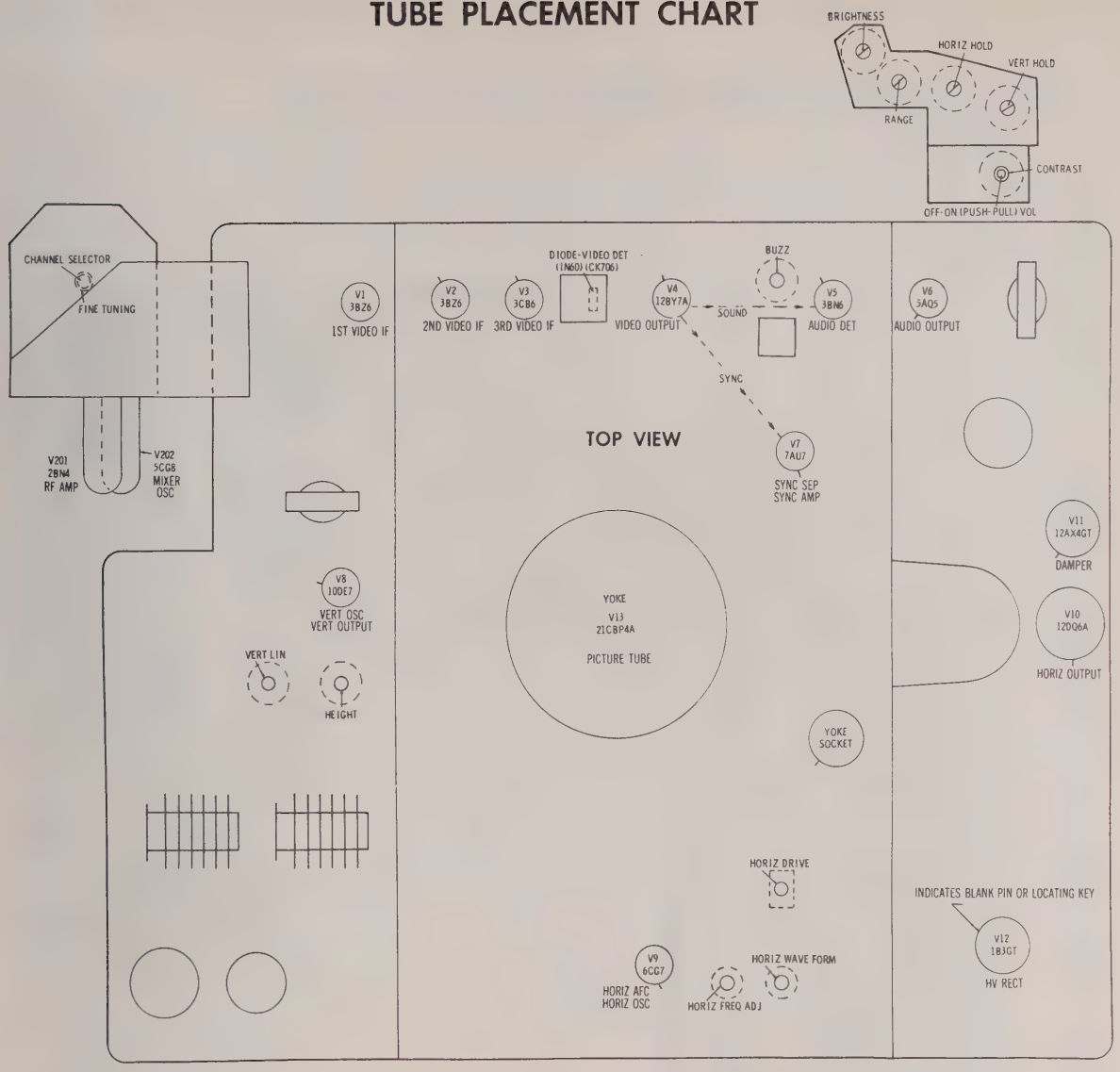
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

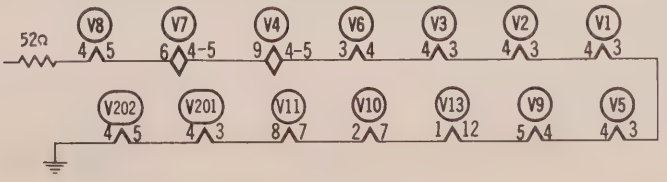
POWER SUPPLY FAILURE
No raster, no sound - **Circuit Breaker (M5), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M3), V4**
No pic, no sound, has snow - **V201, V202, V1**
No pic, has sound, has raster - **V4, V13**
Has pic, no sound - **V5, V6**

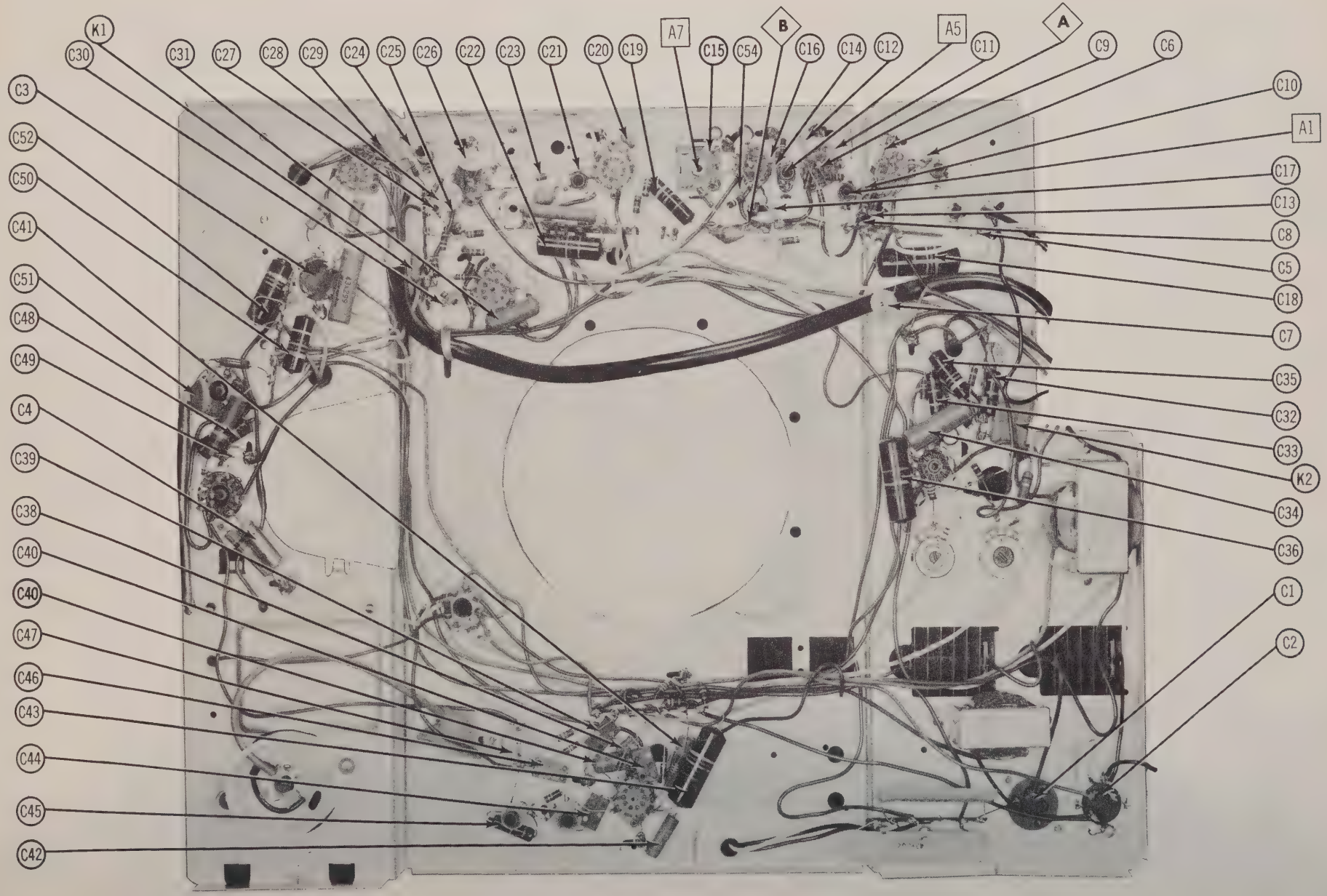
SYNC FAILURE
No vert. sync - **V7**
No horiz. sync - **V7, V9**
No vert. or horiz. sync - **V7**

SWEEP FAILURE
No raster, has sound - **V9, V10, V11, V12, V13**
No vertical deflection - **V8**
Poor vert. linearity or foldover - **V8**
Poor horiz. linearity or foldover - **V9, V10, V11**
Narrow picture - **V9, V10, V11, M1, M2**
Vert. off freq. - **V8**
Horiz. off freq. - **V9**

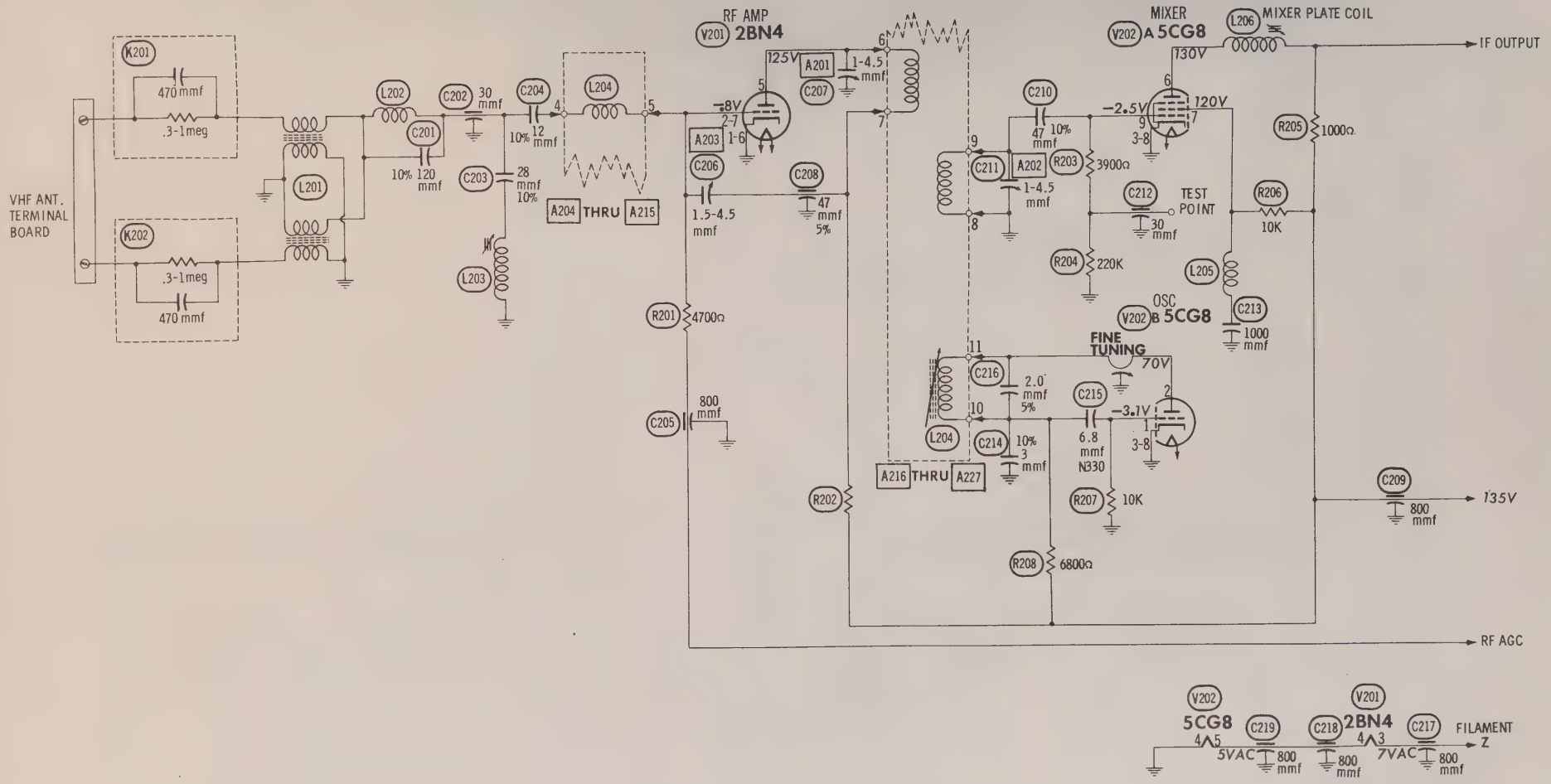
This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



SET 402 FOLDER 4



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #25A1161, 25A1160

TRUETONE MODELS 2D1834A, 2D1835A, 2D1836A, 2D1837A

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the negative lead of a 1.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Set Local-Distant switch to "Local" and contrast control fully counter clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Antenna coils (A215 and A217 thru A227) are adjusted thru a rectangular hole on the opposite side of the tuner from the oscillator slug adjustments.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Fig. 201	Across VHF antenna terminals thru matching network (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point U. Low side to chassis.	A213, A214, A215, A216	Connect a 22Ω ½ watt carbon resistor across the terminals of the channel 10 antenna coil (A215). Adjust A213 and A214 for a balanced response curve similar to Fig. 203. Remove 22Ω resistor from A215. Adjust A215 by expanding or compressing coil turns for maximum gain between markers with balanced peaks. If the valley is not centered between the two balanced peaks, remove the B plus to the tuner and adjust A216 with a non-metallic alignment tool until the valley is centered between peaks as in Fig. 204. Reconnect B plus to the tuner. Replace tuner shield on tuner.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A217	Adjust for maximum gain and symmetry similar to Fig. 203.
4.	"	"	207MC	205.25MC 209.75MC	12	"	A218	"
5.	"	"	201MC	199.25MC 203.75MC	11	"	A219	"
6.	"	"	189MC	187.25MC 191.75MC	9	"	A220	"
7.	"	"	183MC	181.25MC 185.75MC	8	"	A221	"
8.	"	"	177MC	175.25MC 179.75MC	7	"	A222	"
9.	"	"	85MC	83.25MC 87.75MC	6	"	A223	"
10.	"	"	79MC	77.25MC 81.75MC	5	"	A224	"
11.	"	"	69MC	67.25MC 71.75MC	4	"	A225	"
12.	"	"	63MC	61.25MC 65.75MC	3	"	A226	"
13.	"	"	57MC	55.25MC 59.75MC	2	"	A227	"

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.5MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru detector (Fig.1) to pin 5 (plate) of 3BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC	"	"	Mixer Plate Coil & A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. The mixer plate coil and A2 shape the top of response. A3 places 41.25MC marker. A3 must be adjusted accurately or sound rejection will not be correct. The 45.75MC marker must be placed exactly on peak or the 44.5MC marker will not be correct in following steps.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis. DC probe of VTVM to point (B). Common to chassis. (Across video det. load).	A4	Adjust sweep output for -2 volts on VTVM. Adjust A4 for maximum gain at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM gain at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.3MC 44.5MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. The 44.5MC is critical so if necessary, retouch A7 to place 44.5MC marker at 98%. If necessary, retouch A6 for correct position of 45.75MC marker and A4 to position 42.8MC marker. (A4 seldom needs retouching). DO NOT retouch mixer plate coil or A2.

4.5MC TRAP ALIGNMENT

Use 0-10 volt AC scale on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection. This adjustment can be made while observing a picture from a station. Adjust for MINIMUM beat (grain) interference in picture.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength by use of an attenuator or similar device until a hiss similar to super regenerator is heard in the sound.
Adjust A9, A10 and the buzz control (R8) for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal strength until the hiss returns.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

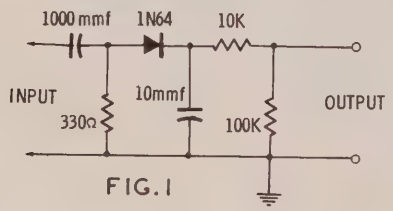


FIG. 1

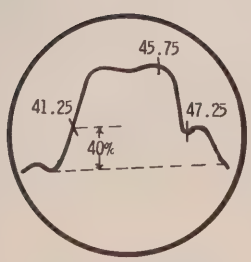


FIG. 2

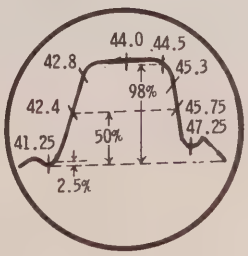


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3BZ6	
V4	2nd. Video IF Amp.	3BZ6	
V3	3rd. Video IF Amp.	2CB6	
V4	Video Output	12BY7A	
V5	Audio Det	3BN6	
V6	Audio Output	6AQ6	
V7	Sync Sep. -Sync Amp.	7AU7	
V8	Vert. Osc. -Vert. Output	10DE7	
V9	Horiz. AFC-Horiz. Osc.	6CG7	
V10	Horiz Output	12DQ6A	
V11	Damper	12AX4GTA	
V12	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No.	NOTES
V13	21CBP4A		21CBP4-A ①	21CBP4/ 21CBP4A ②	① "Silverama" ③ ② "Silver screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	ERIE PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	140	150	45X428	AFH51-33	XA0281	FP1Y		TMS-24	T-055	TVL-1428
C2A	≤125	300	45X431	AFH4-02-60	XC0733.2	FP318			Q-017	*PR3576
B	≤20	300				TC36			MT-0825	
C	≤20	50								
C3A	≤125	300	45X430	AFH3-98-82	C0733.7	FP420.76			T-115	TVL-3574.6
B	≤60	300				TC85			MT-0650	
C	≤40	50								
C4	4	50	45X418	PRS150V4	BBR4-50	TC30		M1.5-50	MT-0504	TE-1303

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	47			NPO-DI 47	D6-470	L10Q47	ED-47		MS-447	10%
C6	47			NPO-DI 47	D6-470	L20Q47	ED-47		MS-447	10%
C7	10000			BPD-01	DD-103	BYA5S1	ED-01	DCS11	5HK-S1	
C8	1000			BPD-001	DD-102	BYA5S2	ED-1000	DCS21	5HK-D1	
C9	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C10	56			NPO-DI 56	TCZ-56	L10G56	TCO-56			NPO
C11	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C13	1000			BPD-001	DD-102	BYA5D1	ED-1000	DCS21	5HK-D1	
C14	68			NPO-DI 56	TCZ-68	C10Q68C	TCO-68		5TCC-Q68	NPO
C15	680				D6-681	1R5T68	ED-680	UC-5368	MS-368	10%
C16	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C17	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C18	.47	200		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C19	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C20	47			S147	D6-470	GP-47		UC-5447	5GA-Q47	
C21	30									N330 10%
C22	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C23	1.5			NPO-S11.5	TCZ-1R5	CTA5V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C24	15			NPO-DI 15	DD-150	L10Q15	ED-15		MS-415	10%
C25A	1000			BPD-1X001	DD-102	BYC5DD1	EDH-001	DCD521	5HK-2D1	
B	1000									
C26	5000			BPD-005	DD-502	BYA10D5	ED-005	DCS25	5HK-D5	
C27	1000			BPD-001	DD-102	BYA5D1	ED-001	DCS21	5HK-D1	
C28	5000			BPD-005	DD-502	BYA10D5	ED-005	DCS25	5HK-D5	
C29	.0047	600		P668N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C30	5000			BPD-005	DD-502	BYA10D5	ED-005	DCS25	5HK-D5	
C31	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C32	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C33	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C34	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C35	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C36	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C37	18		RCM20B180K	1469-00018	D6-180	2SR5Q8	ED-18		MS-418	10%
C38	82		RCM20B820K	1469-00082	D6-820	2SR5Q82	ED-82		MS-482	10%
C39	100			1469-0001	D6-101	2SR5T1	ED-100	MCB235	MS-31	10%
C40	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C41	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C42	.022	200		P288N-022	DD-403	CUB4S22	ED-03	GEM-4143	2TM-S22	
C43	.047	200		P288N-47		CUB2P47		GEM-4047	2TM-P47	
C44	330			1469-00022	D6-221	22R5T22	ED-220		MS-322	10%
C45	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C46	820		RCM30B821K	1464-00082		1R5T82	ED-820		MS-382	10%
C47	170- 700			17A271						
C48	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C49	1000			BPD-001	DD-102	BYA5D1	ED-1000	DCS21	5HK-D1	
C50	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C51	56	5000	47X755							10%
C52	.047	600		P668N-047	DF-503	CUB6S47		GEM-4147	6TM-S47	
C53	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C54A	1000			BPD-2X001	DDH-102	BYC5DD1	EDH-001	DCD-521	5HK-2D1	
B	1000									

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	78X31				U31168	Contrast
B	1meg	½					Not Req.	Volume
C	Switch						Not Req.	
R4A	1meg	½	40X428	AB-69	A47-1meg-S	Q11-137	U54	Vert. Hold
B	Shaft			AK-8 *	RS-3/16 *	NQ	D6-37 *	
R3A	50K	½	40X427	AB-31	A47-80K-S	Q11-133	U35	Horiz. Hold
B	Shaft			AK-8 *	RS-3/16 *	NQ	D6-37 *	
R4A	7-10meg	½	40X429				U32 †	Range
B	Shaft						Not Req.	
R5A	570K	½	40X426	AB-59	A47-500K-S	Q11-133	U50	Brightness
B	Shaft			AK-8 *	RS-3/16 *	NQ	D6-37 *	
R6A	1500Ω	½	40X399	AB-8	A47-1500-S	Q11-109	PTA152L	Vert. Lin.
B	Shaft			AK-19	RH-3	TQ	Not Req.	
R7A	2.5meg	½	40X398	BX-63	A47-2.5meg -S	Q11-239	TA255L	Height
B	Shaft						Not Req.	
R8	500Ω	2(WW)	40X397	Not Req.	FKS-1/4 39-500	TQ	FL-500	Buzz

* File flat as needed to fit knob.
† Do not solder any wires to left hand terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R9	2.2meg			
R10	5600Ω			
R11	470Ω			
R12	47Ω			
R13	1000Ω			
R14	68K			
R15	470Ω			
R16	47Ω			
R17	470Ω			
R18	22K			
R19	470Ω			
R20	180Ω			
R21	1meg			
R22	3900Ω			
R23	1meg			
R24	47Ω			
R25	3600Ω	4		
R26	180K			
R27	10meg			
R28	100K			
R29	680Ω			
R30	4700Ω			
R31	330K			
R32	330Ω	1		
R33	470Ω	1		
R34	10K			
R35	2.2meg			
R36	820K			
R37	680K			
R38	47K			
R39	6800Ω			
R40	4700Ω			
R41	470K			
R42	390K			
R43	22K		B84223	
R44	6800Ω			
R45	2.2meg			
R46	180Ω		B84181	
R47	1000	1		
R48	15K			
R49	5800			
R50	560Ω			
R51	330K			
R52	820K			
R53	220K			
R54	120K			
R55	82K			
R56	330K			
R57	3900Ω			
R58	82K			
R59	22K			
R60	10K			
R61	56K			
R62	1meg			
R63	68Ω			
R64	470K			
R65	10K	2		
R66	100Ω	2		
R67	5600Ω			
R68	1300Ω	10	43X299	
R69	6.5Ω	10	43X303	
R70	52Ω	10		

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T1	Vert. Osc	54X19-A	[redacted]	A-3003	V405	A-8125	26A03	A-97X	
	Alt. Vert Osc.	54X19							
T2	Vert. Output	51X86B	Z1900 ⑫	A-3038 ⑫	V307 ⑫	VO-100 ⑫	26873 ③	A-118X ③	
	Alt. Vert. Output	51X86							
T3A	Yoke-Horiz. (24.5MH)	9A-2403 ④	DF607 ⑤⑥	MDF-92 ⑤ ⑥	Y90F19/43 ⑤ ⑥	DY-16A ⑤ ⑥	Y-16 ⑤ ⑥	Y-45 & NW21 ⑥	
B	(90°)-Vert. (30MH)							YCI	
M6	Rear Cover & Centering Device	2A435						CLI	
	Yoke Clamp	30X61							
	Rubber Strip	8X247							
T4	Horiz. Output	53X362C	FB419 ⑤	*HVO-36 ⑤	* X094 ⑤	HO-283*	FLY-16 ⑤	* D-121 *	
	Alt. Horiz. Output	53X364	FB419 ⑤	*HVO-36 ⑤	* X094 ⑤	HO-283*	FLY-16 ⑤	* D-121 *	

① Connect as autoformer.
② Use 9 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes resistors (R49, R50).
⑤ Use original rear cover, centering device and horizontal damping network.
⑥ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	9	9	9	8	9	4
7	7	7	7	3	7	3
6	See Note ⑦ NC	See Note ⑦ NC	See Note ⑦ NC	4	See Note ⑦ NC	2
5	1	1	1	1	1	1
Special Notes	⑦	⑦	⑦		⑦	

⑦ Install new damping network consisting of approximately 50mmf in series with resistor (R67) across horizontal yoke terminals #3 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6000Ω	3-4Ω	51X85	Z1110	A-3026	AU-602 ①	A-3877①	26851 ①	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	12A531		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	39MC Trap	9A2389			4302		
L2	1st. Video IF	9A2365	17-4534	TV-131	4302	VF-4	
L3	2nd. Video IF	9A2363	17-4536		4222		Includes 47.25MC Trap
L4	3rd. Video IF	9A2414	17-4535		4221		Includes 41.25MC Trap
L5	4th. Video IF	9A2370	17-4514				Includes Assy.
L6	Resonant Choke	9A2375					30 Microhenries
L7	Shunt Peaking Coil	36A13	19-4160 *	TV-134 *	6L30 *		160 Microhenries, wound on 22K resistor

COILS (cont)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L8	4.5MC Trap	9A2366	20-1004	TV-151	1469 ▲	87-3	
L9	Series Peaking Coil	36A48	19-4400 +	TV-190 +	6L33 +	VP-7 +	350 Microhenries, wound on 6800Ω resistor
L10	Shunt Peaking Coil	36A33	19-3250 †	TV-185 †	6L81 †	VP-6 †	225 Microhenries, wound on 2200Ω resistor
L11	Sound IF	9A2400	17-1028	TV-154	1470 ▲		
L12	Quadrature Coil	9A2387	20-1005	TV-131	1460		
L13	RF Choke	9A2390	19-1001	BC-582	4604		1.5 Microhenries

* Parallel with 22K resistor. ▲ Disregard tap.
+ Parallel with 6800Ω resistor. ▲ Drill mounting holes.
† Parallel with 2200Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI	DC RES SEC	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L14	74Ω *		9A237L		TV-165	6211 ▲		T-7	Horiz. Freq.
L15	58Ω		9A237S			6215		T-5 ▲	Horiz. Waveform

* Tapped ④ 52Ω. ▲ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 (^L)	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L16	260A	40Ω	1 Hy.	52X95-6	C5037 ①	C-3981 ①		C-2326 ①	26C45 ①	C-27X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	TRUETONE PART No	REPLACEMENT DATA	
K1	Sync Coupling	330mmf, 150K	78X13		
K2	Vert. Integrator	3000mmf, 5000mmf, 8000mmf, 22K, 82000, 8200Ω	78X7	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-115 PC-104 115T40 1406-01 V-1
K3	Chassis Isolation	470mmf, .3-1meg	78X11	Centralab Sprague	RC-471 R-R77

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA: TRUETONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	260A	66X14 ①	1090A ①	1N1007 ③	RS3008L ①	300 ①	① Selenium type.
					SD64A ②	M500 ②	② Germanium type.
M2	.25* A	66X14 ①	1090A ①	1N1007 ②	RS3008L ①	300 ①	③ Silicon type.
					SD64A ②	M500 ②	

CRYSTAL DIODES

ITEM No	ORIG. TYPE	REPLACEMENT DATA: TRUETONE PART No.	CBS PART No.	SYLVANIA PART No	NOTES
M3	1N60 *		1N60	1N60	Video Detector (Pigtail).

* Some versions may use CK708 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuner	25A1181	VHF (Standard Coil #NAS-4139)
	Tuner	25A1180	VHF (Standard Coil #NAS-4145)
	Tuner	25A159	UHF (Standard Coil #NEUFS-103)
M5	Circuit Breaker	2A475	Thermal cutout
M6	Centering Device	2A435	Includes yoke cover
	Magnet	2A476	Beam alignment used with some picture tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

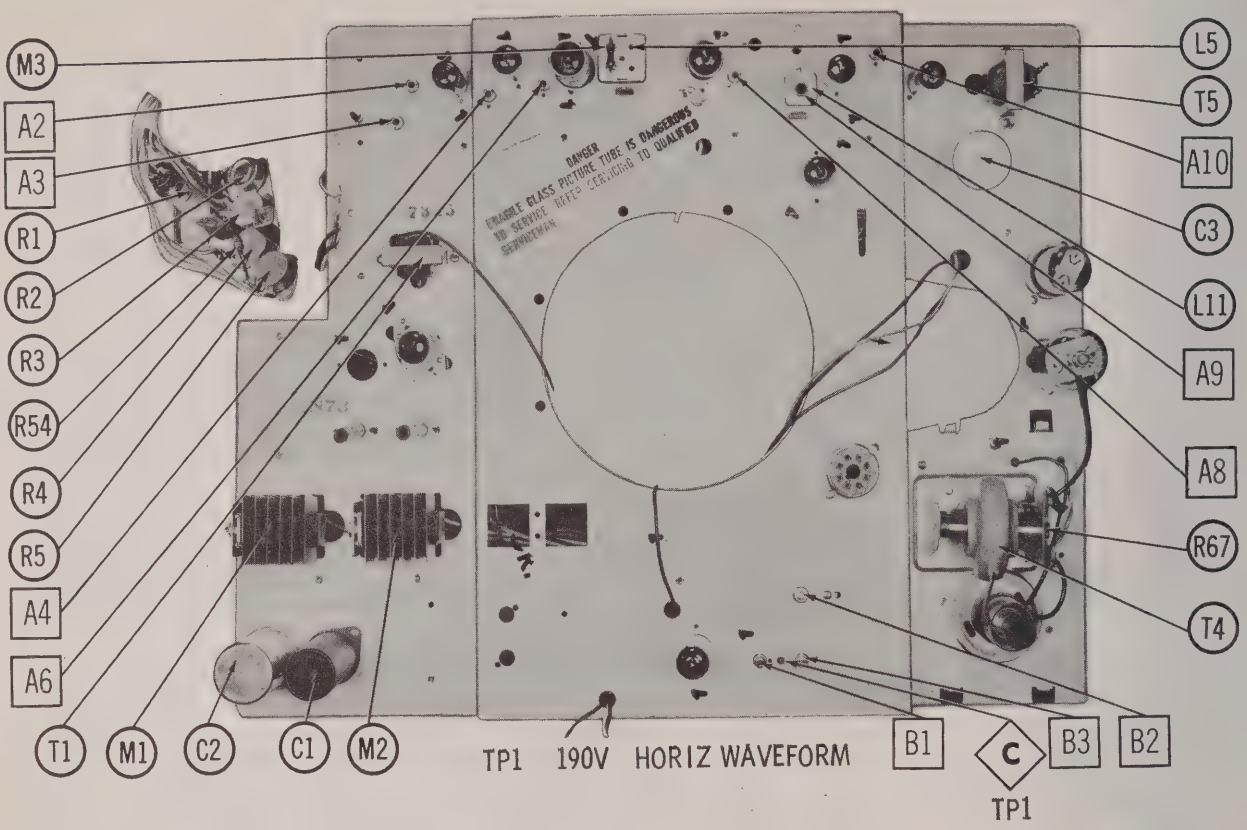
NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Knob	10A899-1	Channel Selector
Knob	10A893-3	UHF Tuning
Knob	10A894-3	UHF Indicator
Knob	10A895-1	Fine Tuning
Knob	10A896-1	Contrast
Knob	10A897-1	On-off-volume
Knob	10A851-1	Brightness, range, horiz. hold, vert. hold

WIRING DATA

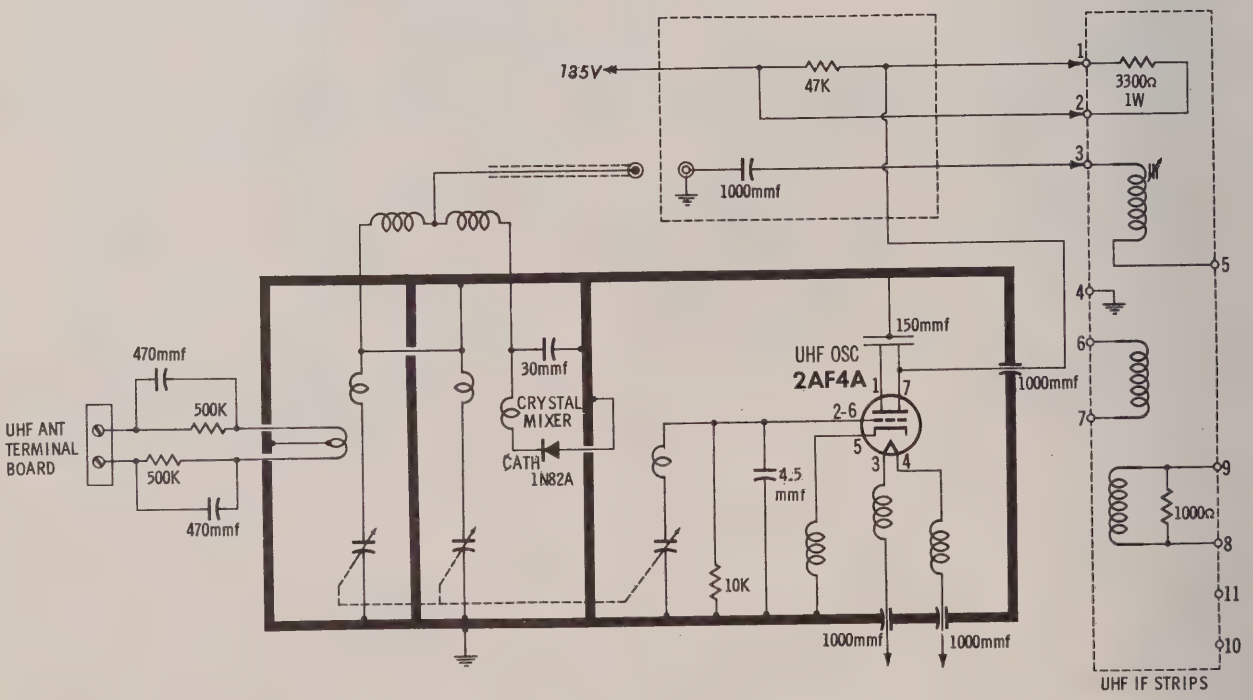
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8886 (Single Conductor) 8728 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8464 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8468 (Round) - 8 Conductor

TRUETONE MODELS 2D1834A, 2D1835A, 2D1836A, 2D1837A

FOLDER 4

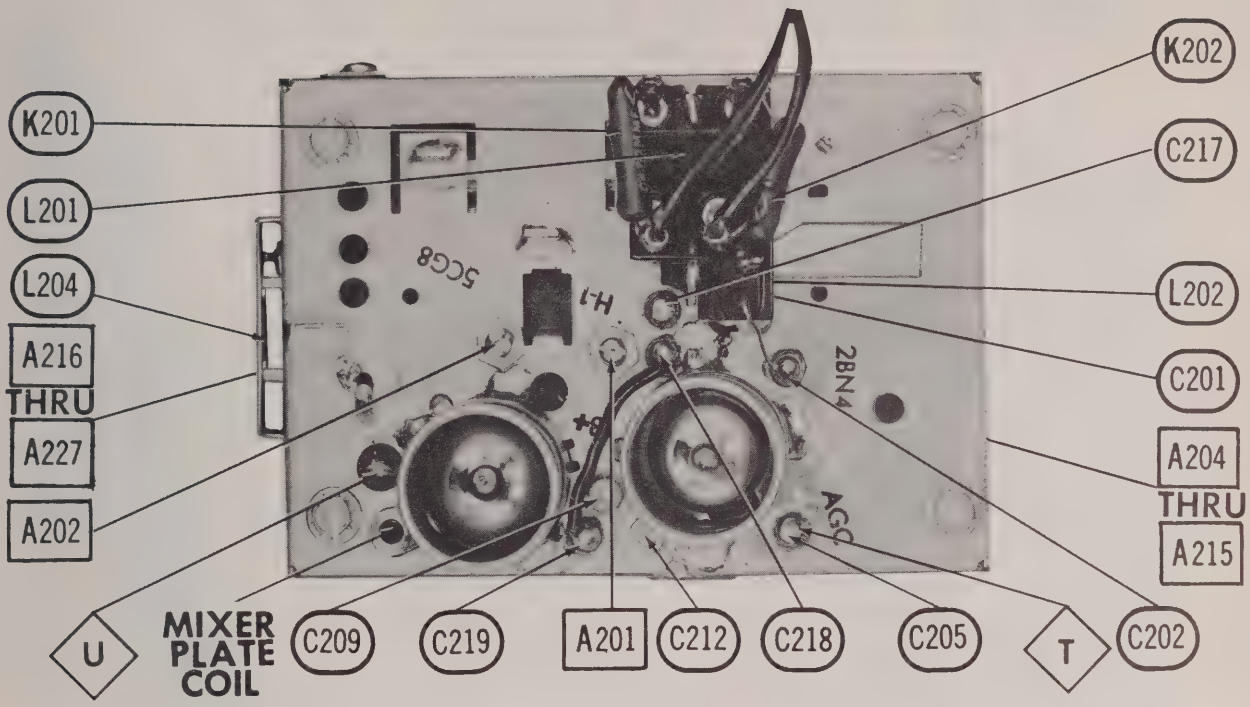


CHASSIS TOP VIEW

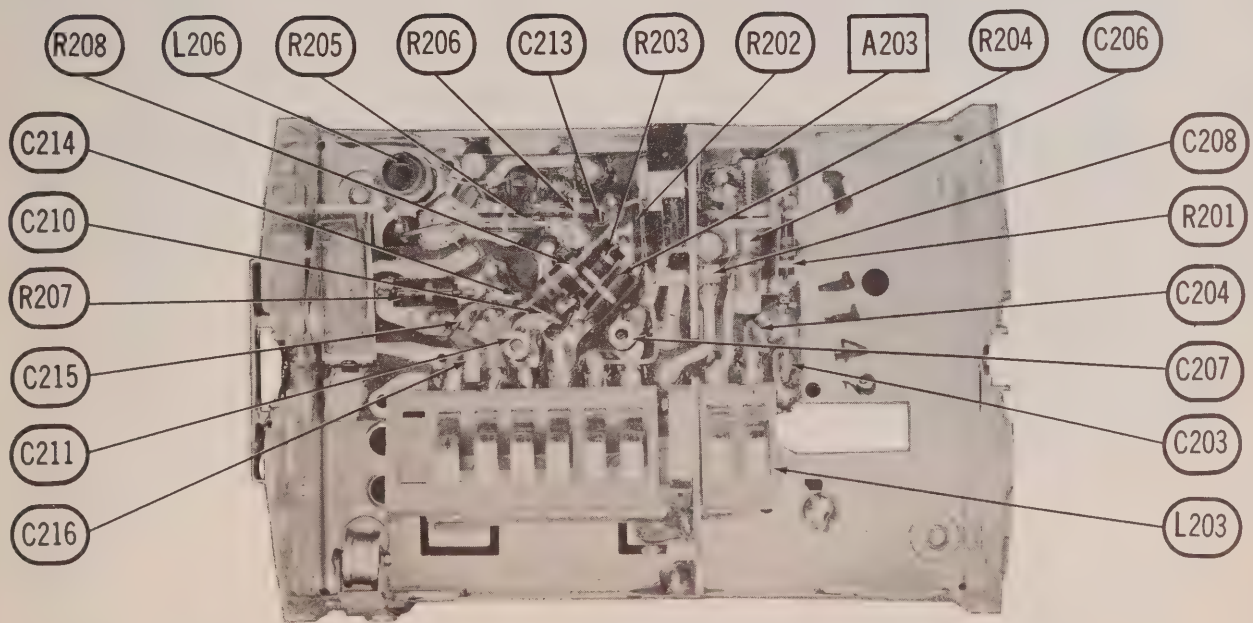


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF TUNER #25A1159



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120			NPO-DI 120	TCZ-120	C10T12C	TCO-120		5TCC-T12	10%
C202	30		13M320EA300J-05							
C203	28		13R-005							10%
C204	12		13R-003							10%
C205	800		13M320EA801Z-04							
C206	1.5-4.5				829-6		532-B			
C207	1-4.5		31B-902-07		829-6		532-B			
C208	47		13M130U470J							5%
C209	800		13M320EA801Z-04							
C210	47									10%
C211	1.4.5		31B-902-07		829-6		532-B			
C212	30		13M320EA300M-06							
C213	1000		13R-024							
C214	3		13R-011							10%
C215	6.8		13R-014							N330
C216	2.0		13R-009							5%
C217	800		13M320EA801Z-04							
C218	800		13M320EA801Z-04							
C219	800		13M320EA801Z-04							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	10K			
R208	6800Ω			

COILS (RF-IF)

ITEM No.	USE	TRUETONE PART No.	NOTES
L201	Ant. Trans.	31T-2107-01	
L202	IF Trap Coil	34A-748	
L203	IF Trap Coil	31TA-2109	
L204A	Ant., RF, Mixer Grid, Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7
G	"	31M-300-8N4A	Channel 8

ITEM No.	USE	TRUETONE PART No.	NOTES
L204H	Ant., RF, Mixer Grid, Osc. Coils	31M-300-9N4A	Channel 9
I	"	31M-300-10N4A	Channel 10
J	"	31M-300-11N4A	Channel 11
K	"	31M-300-12N4A	Channel 12
L	"	31M-300-13N4A	Channel 13
L205	RF Choke	25A-176-01	
L206	Mixer Plate Coil	31U-530-01	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	13P-198	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .3-1meg	13P-198	Centralab Sprague	RC-471 R-9177

MISCELLANEOUS

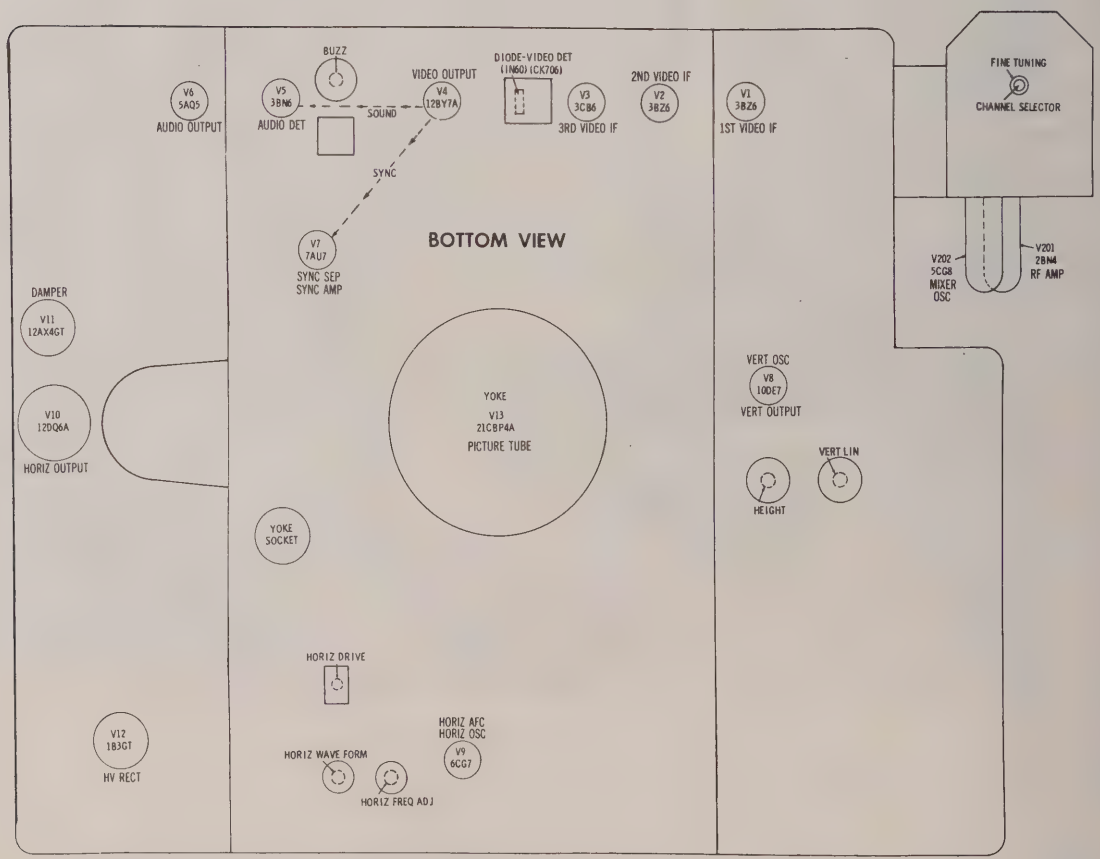
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
	Drum Osc. Slug	31T-2073-171-02 15A-266	Less strips 12 required

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

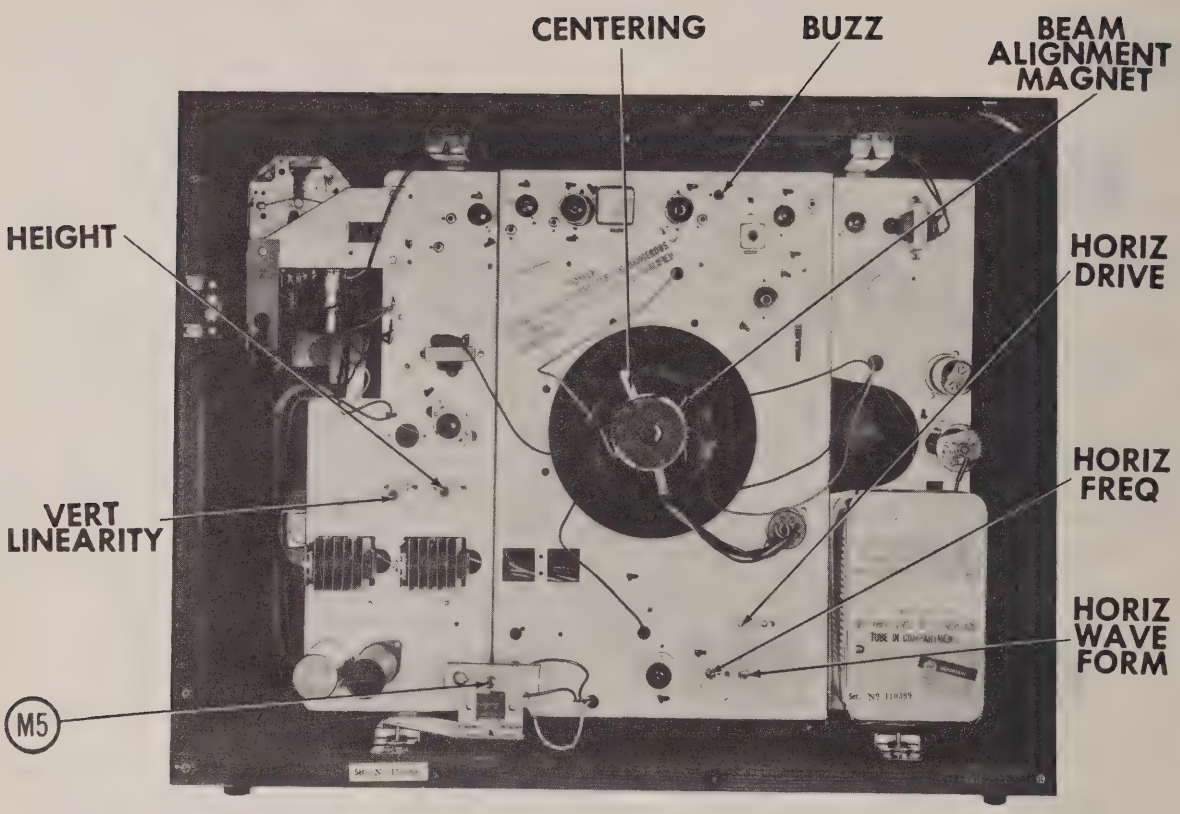
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	1meg	47Ω	10Ω	10.5Ω	†2200Ω	†2200Ω	0Ω		
V2	3BZ6	1meg	47Ω	10.5Ω	11.5Ω	†2200Ω	†2200Ω	0Ω		
V3	3CB6	.1Ω	180Ω	11.5Ω	12Ω	†1700Ω	†1700Ω	0Ω		
V4	12BY7A	•190Ω	1meg	0Ω	13Ω	13Ω	14Ω	†3600Ω	†1200Ω	0Ω
V5	3BN6	•280Ω	2.6Ω	10Ω	9.5Ω	†5900Ω	5.5Ω	†330K		
V6	5AQ5	0Ω	330Ω	13Ω	12Ω	†890Ω	†470Ω	0Ω		
V7	7AU7	†820K	2.2meg	0Ω	14Ω	14Ω	†13K	45K	0Ω	15Ω
V8	10DE7	†370Ω	2.2meg	2.2meg	16Ω	15Ω	•‡1.9meg	• 750K	160Ω	• 1400Ω
V9	6CG7	†56K	410K	0Ω	9.5Ω	8.5Ω	•† 13K	1.5meg	410K	0Ω
V10	12DQ6A	TP	4Ω	NC	†10K	470K	NC	7Ω	100Ω	TOP CAP ‡10Ω
V11	12AX4GTA	NC	NC	¶	NC	†.1Ω	NC	4Ω	1.5Ω	
V12	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡317Ω
V13	21CBP4A	7Ω	22K	PIN 6 †100K	PIN 10 ‡10meg	PIN 11 • 260K	PIN 12 8.5Ω			
V201	2BN4	0Ω	1meg	1.5Ω	1Ω	†2300Ω	0Ω	1meg		
V202	5CG8	10K	†8100Ω	0Ω	0Ω	1Ω	†2300Ω	†11K	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 250V SOURCE.
‡ MEASURED FROM PIN 3 OF V11.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the horizontal hold control fully clockwise. Tune in a station and adjust the horizontal frequency slug (B1) until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the contrast control fully counter clockwise and the brightness control clockwise so that the picture appears washed out. Turn the horizontal drive trimmer (B2) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counter clockwise until the white bars just disappear.

Connect the vertical amplifier of the scope to point ⓒ . Low side to chassis. Adjust the horizontal waveform slug (B3) until the round and sharp peaks of the waveform are equal in amplitude. (See Fig. 4). Keep the picture in sync during this adjustment.

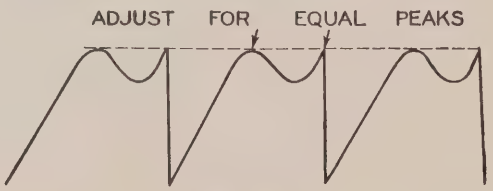


FIG. 4

PHOTOFACT* Folder
*TRADE MARK

BELL SOUND MODEL 5630

BELL SOUND MODEL 5630

BELL SOUND MODEL 5630

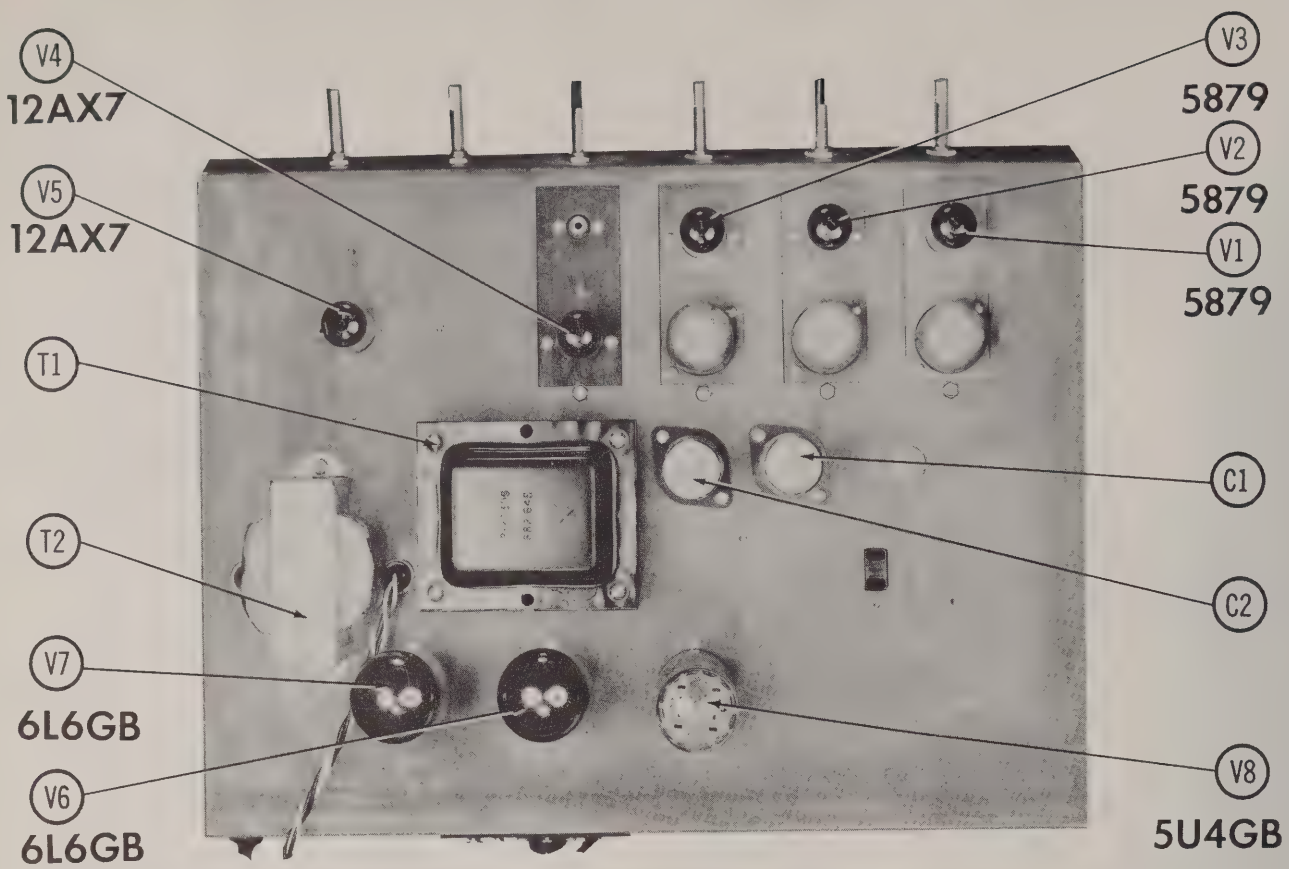
TRADE NAME	Bell Sound Model 5630
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Road, Columbus 7, Ohio.
TYPE SET	AC Operated 4 Channel 30 Watt Audio Amplifier
TUBES (Eight)	Types 5879 Mic 1 Preamp., 5879 Mic 2 Preamp., 5879 Mic 3 Preamp., 12AX7 Phono Preamp.-AF Mixer, 12AX7 AF Amp.-Phase Inv., (2) 6L6GB Output, 5U4GA Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.1 Amp. @ 117 Volts AC (120 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

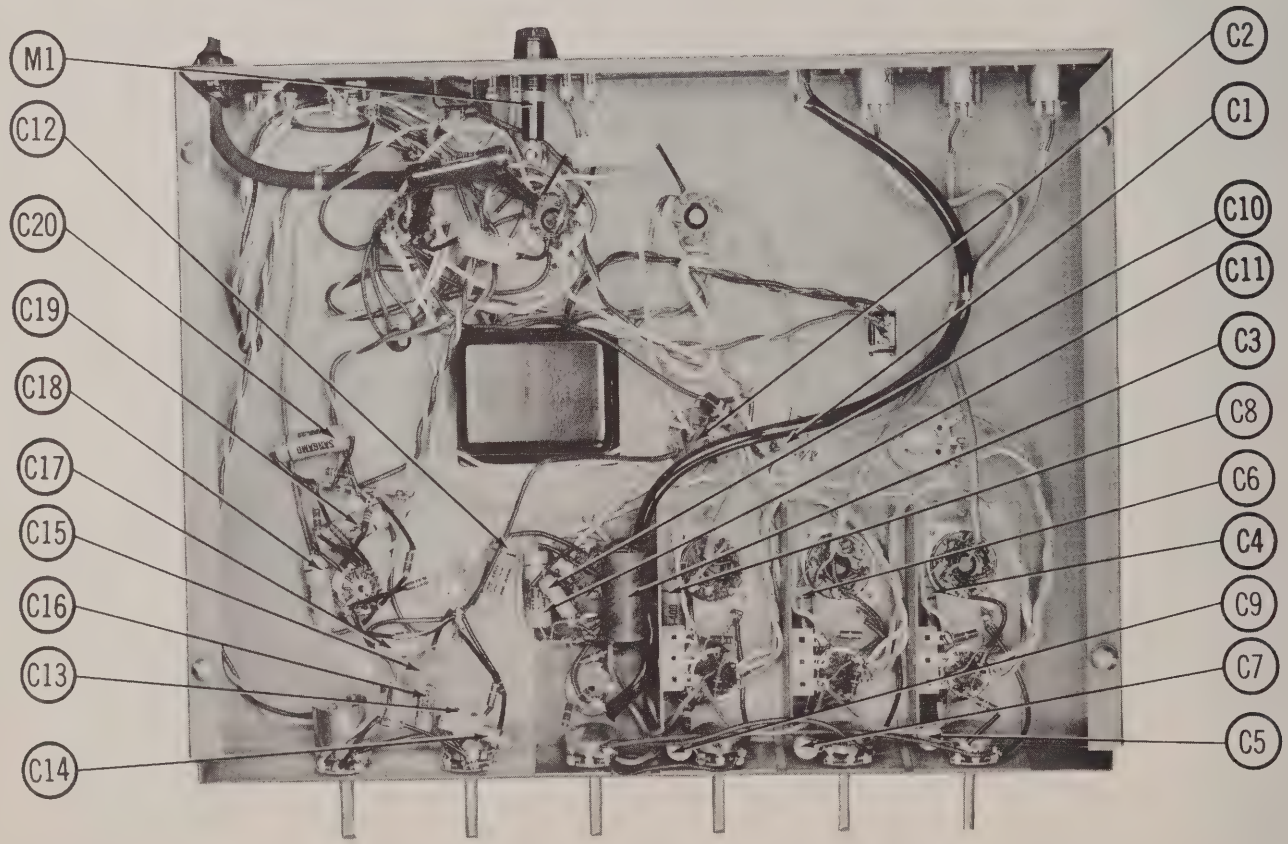
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H361

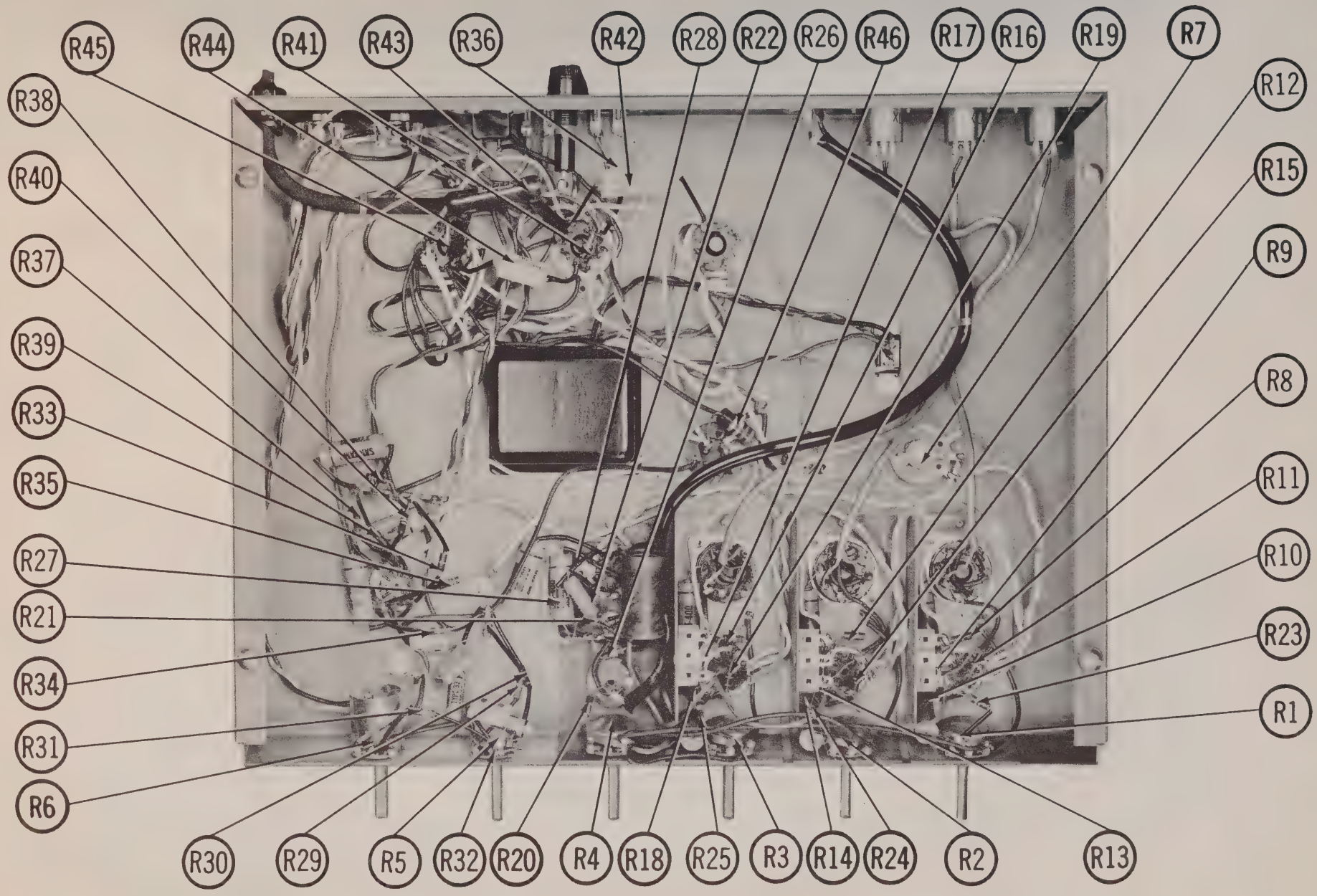
SET 402 FOLDER 5



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
				Bell Sound PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI.	SEC. 1	SEC. 2							
T1	117V @ 1.1A	780VCT @ .130A	5V @ 3A	B-20305	P9315①	P-2954①			24R05①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 3.2A									

①Tape center tap on 6.3V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
			Bell Sound PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.								
T2	5200Ω CT	500Ω Tap @ 70V, 16Ω, 8Ω 4Ω	B-20306							

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

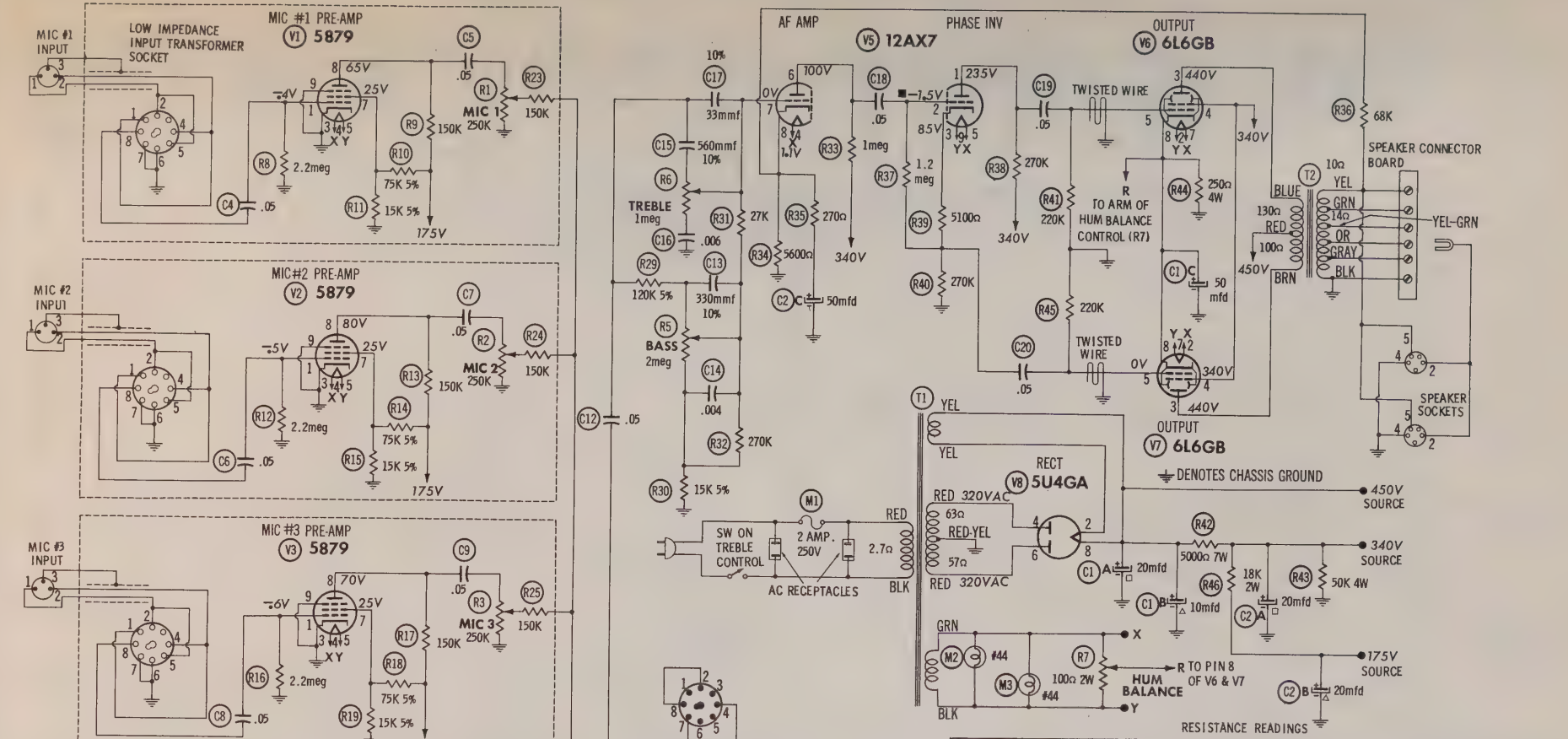
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Bell Sound PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002. (3AG 2A 250V)	342001	AGC2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Bell Sound PART No.	NOTES
M2	Pilot Lamp		#44
M3	Pilot Lamp		#44

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5879	2.2meg	NC	0Ω	270Ω	270Ω	NC	†35K	†170K	0Ω.
V2	5879	2.2meg	NC	0Ω	270Ω	270Ω	NC	†35K	†170K	0Ω
V3	5879	2.2meg	NC	0Ω	270Ω	270Ω	NC	†35K	†170K	0Ω
V4	12AX7	†200K	50K	2700Ω	270Ω	270Ω	†170K	0Ω	8200Ω	270Ω
V5	12AX7	†270K	1.5meg	270K	270Ω	270Ω	†1meg	300K	5600Ω	270Ω
V6	6L6GB	TP	270Ω	†130Ω	†5000Ω	220K	TP	270Ω	250Ω	
V7	6L6GB	TP	270Ω	†100Ω	†5000Ω	220K	NC	270Ω	250Ω	
V8	5U4GA	NC	20K(MIN)	NC	63Ω	NC	57Ω	NC	20K(MIN)	

† MEASURED FROM PIN 8 OF V8
■ MEASURED FROM PIN 3 OF V5
NC NO CONNECTION
TP TIE POINT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic 1 Preamplifier	5879	
V2	Mic 2 Preamplifier	5879	
V3	Mic 3 Preamplifier	5879	
V4	Phono Preamp. -AF Mixer	12AX7	

ITEM No.	USE	TYPE	NOTES
V5	AF-Amp-Phase Inv-	12AX7	
V6	Output	6L6GB	
V7	Output	6L6GB	
V8	Rectifier	5U4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Bell Sound PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 20	450		AFH3-138	C0970	FP366	TMT-138	T-700	TVL-3751
B	▲10	450							
C	50	50							
C2A	■ 20	450		AFH3-138	B0400	FP234		T-558	R2531 *
B	▲ 20	450			BBR50-25	TC29			
C	50	25							
C3	150	15		PRS50V150	BR1505	TC1502	TD-150-50	S-055	TVA-1311

*Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Bell Sound PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C5	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C6	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C7	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C8	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C9	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C10	.001	400		P488N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C11	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C12	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C13	330			1469-00033	D6-331	5R5T33		MS-333	10%
C14	.004	400		P488N-004	D6-402	CUB6D4	GEM-624	6TM-D4	
C15	560			1464-00056	D6-561	1R5T56		MS-356	10%
C16	.006	400		P488N-006		CUB6D6	GEM-624	6TM-D6	
C17	33			1469-000033	D6-330	22R5Q33		MS-433	10%
C18	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C19	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C20	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Bell Sound PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	½	B20066P145	B-51	A47-250K-Z	Q13-130	U44	Mic 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	250K	½	B20066P145	B-51	A47-250K-Z	Q-13-130	U44	Mic 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	250K	½	B20066P145	B-51	A47-250K-Z	Q-13-130	U44	Mic 3
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	500K	½	B20066P142	B-60	A47-500K-Z	Q-13-133	U48	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	2meg	½	B20066P147	B-76	A47-2meg-Z	Q-13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	1meg	½	B20066P146	B-70	A47-1meg-Z	Q-13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1orKR-1*	SWE-12	76-1	US-26	
R7A	100Ω	2(WW)	B-20066P141	WN-101	A43-100	WPK100	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* Use KR on CRL " red label controls & KB on "blue label controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Bell Sound PART No.	NOTES
	OHMS	WATT		
R8	2.2meg			
R9	150K			
R10	75K 5%			
R11	15K 5%			
R12	2.2meg			
R13	150K			
R14	75K 5%			
R15	15K 5%			
R16	2.2meg			
R17	150K			
R18	75K 5%			
R19	15K 5%			
R20	1.2meg			
R21	150K			
R22	8200Ω			
R23	150K			
R24	150K			
R25	150K			
R26	150K			
R27	180K			

ITEM No.	RATING		Bell Sound PART No.	NOTES
	OHMS	WATT		
R28	2700Ω			
R29	120K 5%			
R30	15K 5%			
R31	27K			
R32	270K			
R33	1meg			
R34	5600Ω			
R35	270Ω			
R36	68K			
R37	1.2meg			
R38	270K			
R39	5100Ω			
R40	270K			
R41	220K			
R42	5000Ω	7		
R43	50K	4		
R44	250Ω	4		
R45	220K			
R46	18K	2		

PHOTOFACT* Folder

COLUMBIA RECORDS
MODEL 360

COLUMBIA RECORDS
MODEL 360

TRADE NAME	Columbia Records Model 360
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amp.-Phase Inv., (2) 50C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .25 Amp. @117 Volts AC (24 Watts Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SIMILAR V-M MODEL 1200A—PHOTOFACT SET 353 FOLDER 16

COLUMBIA RECORDS
MODEL 360

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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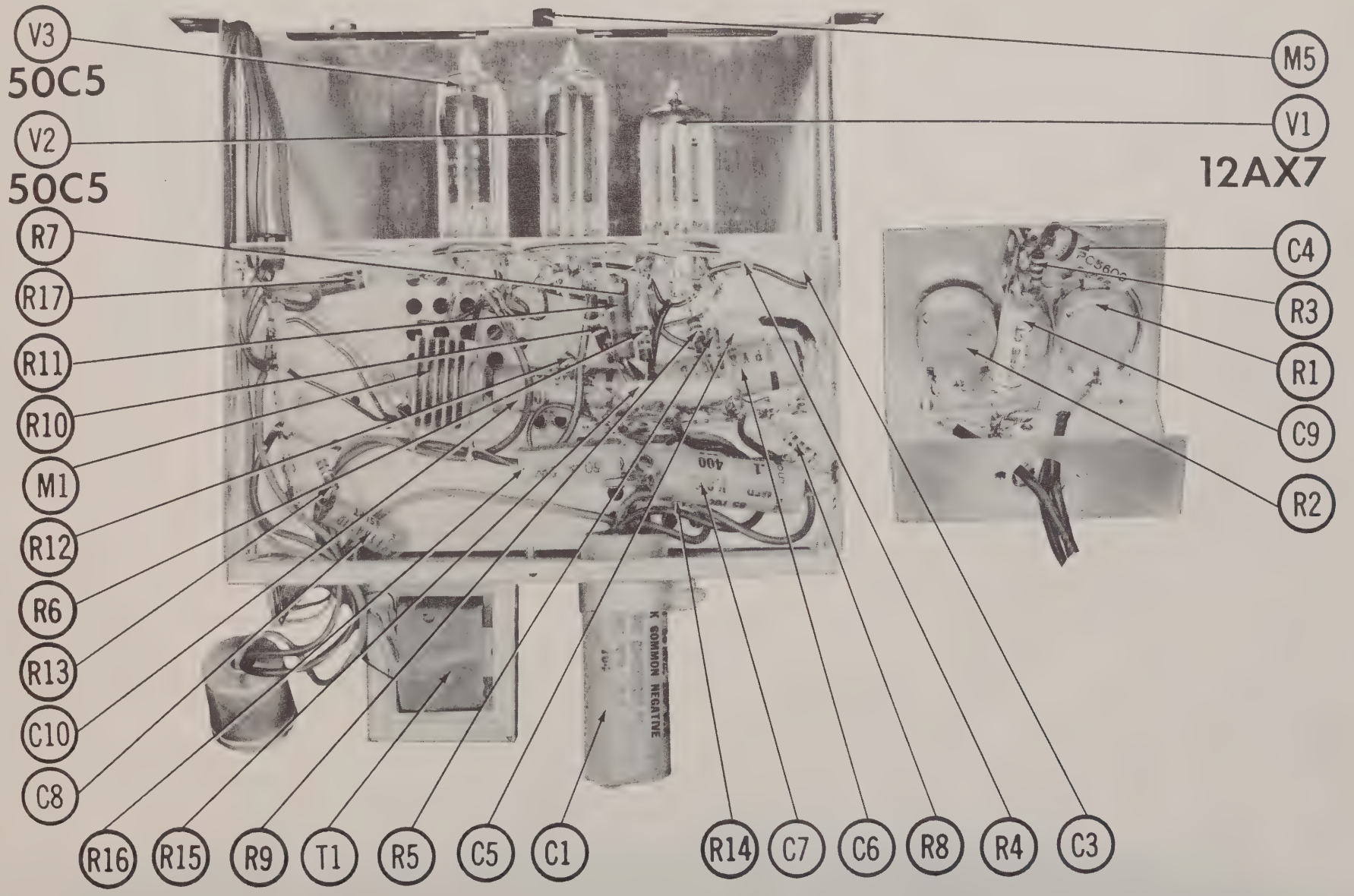


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inv.	12AX7	
V2	Output	50C5	
V3	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	1IA710	PRS150V8050	BBRD8515	TCD498	TDLD-12	FMD-303	TVA-2462
B	50	150							
C2	100	25NP		NP-PRS25V100		TC425			R2267 *

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records Part No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C4	.005	600		P688N-005	DD-502	CUB6D5	GEM-625	6TM-D5	
C5	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C6	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C8	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	①
C9	.047	200							10%
C10	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

① Some versions may use .04mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records Part No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.25meg	½	9A558	BT-8515	A47F-3meg		UT-461	Volume, Tap@250K
B	Shaft			Not Req.	KSS-3		Not Req.	
R2A	7500Ω	½	9A559	B-13	A47-7500-S	Q11-115	U20	Tone
B	Shaft			Not Req.	KSS-3	Not Req	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R3	47K			
R4	10meg			
R5	270K			
R6	47K			
R7	10meg			
R8	3300Ω			
R9	270K			
R10	470K			
R11	100Ω	1		
R12	470K			
R13	18K			
R14	47Ω			
R15	1100Ω	1		Note 1
R16	50Ω	5	16A402	
R17	47Ω	1		Note 2

Note 1. Some versions may use 1000Ω in this application.
Note 2. Some versions may use 39Ω in this appliscation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Columbia Records Part No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3600Ω CT	3-4Ω Tap@ 1.6Ω	3A212							

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Columbia Records PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	1A104	6A1	
SP2	6"	PM	3-4Ω	1A104	6A1	
SP3	6"	PM	3-4Ω	1A104	6A1	

CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	0A	.1Ω	300MH	21A101						

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.095A	10A608 ①	1101A ①	RS100A ①	100A ① M150 ②	①Selenium Type ②Silicon Type

PHONO CARTRIDGE

ITEM No.	Columbia Records Part No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	T0-400-0V	118-TS	N8-1 and N8-3	56	PT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	Columbia Records PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	(78rpm)	† CRA-55 or ♦ CRA-55D	† W64S or ♦W64D	† Jewel ♦ Diamond
	(LP)	† CRA-55LP or ♦ CRA-55LPD	† W64MGS or ♦W64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M4	Lamp		#49
M5	Switch	19A565	Tuner or Binaural-Phono (Slide Type)

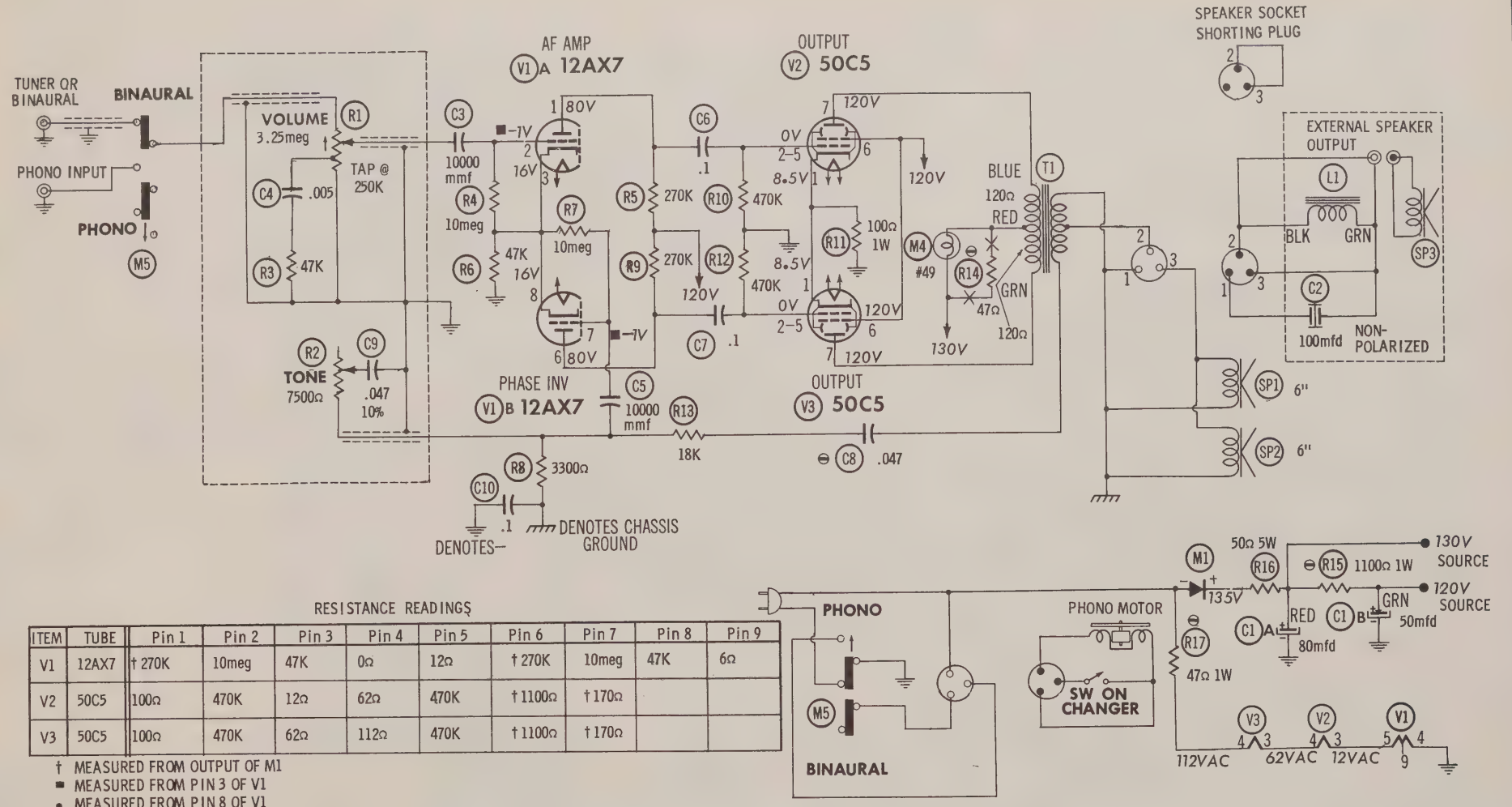
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8A462	Loudness, Mahogany
Knob	8A463	Tone, Mahogany
Knob	8A464	Loudness, Blonde
Knob	8A465	Tone, Blonde

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 270K	10meg	47K	0Ω	12Ω	† 270K	10meg	47K	6Ω
V2	50C5	100Ω	470K	12Ω	62Ω	470K	† 1100Ω	† 170Ω		
V3	50C5	100Ω	470K	62Ω	112Ω	470K	† 1100Ω	† 170Ω		

† MEASURED FROM OUTPUT OF M1
■ MEASURED FROM PIN 3 OF V1
▪ MEASURED FROM PIN 8 OF V1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

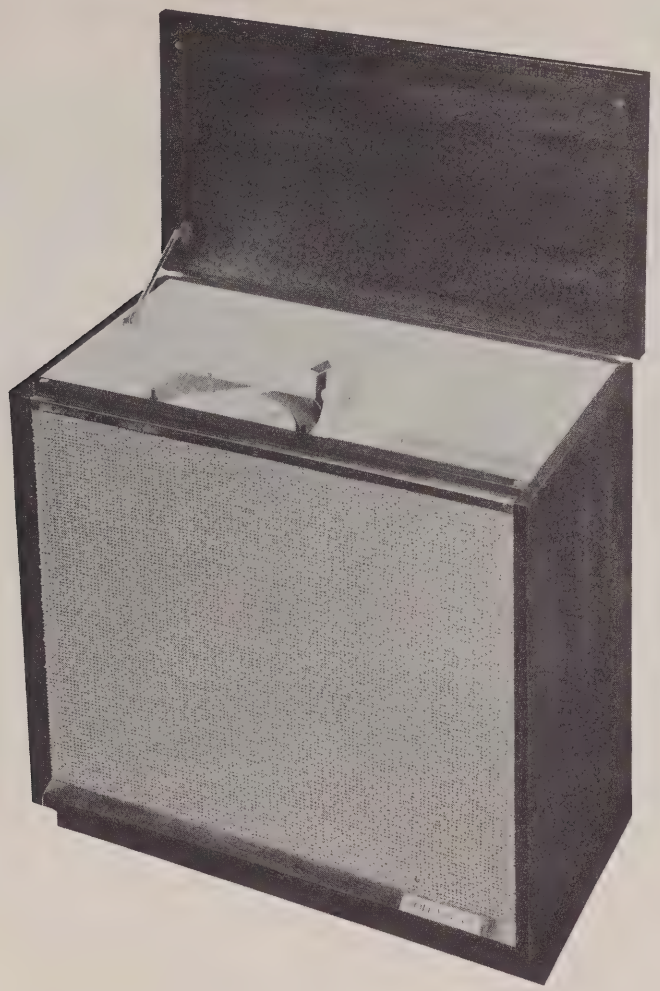
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

COLUMBIA RECORDS MODELS 542, 582

COLUMBIA RECORDS MODELS 542, 582



COLUMBIA RECORDS MODELS 542, 582

TRADE NAME	Columbia Records Models 542, 582
MANUFACTURER	Columbia Records 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Four)	Types 12AU7A AF Amp.-Phase Inv., 12AX7 Driver, (2) 6V6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .4 Amp. @117 Volts AC (40Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE V-M MODEL 1200A— PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H457

SET 402 FOLDER 7

PARTS LIST AND DESCRIPTIONS

COLUMBIA RECORDS
MODELS 542, 582

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inv.	12AU7A	
V2	Driver	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	150	11A705	AFH3-147	C1100	FP369.1	TMT-144	T-725	TVL-3758
B	▲40	350							
C	■40	350							
C2	40	150	11A704	PRS150V40	BR4015	TC48	TD-40-150	MT-1540	TVA-1413
C3	100	25	11A722	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C4	2	50NP		NP-PRS50V2	BBR4-50 †	TC30 †	TD-4-50 †	MT-0504 †	R2233*
					BBR4-50 †	TC30 †	TD-4-50 †	MT-0504 †	

* Non-Catalog Item
† Connect Negative Leads Together

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	1000			SI1000	D6-102	LT6D1	UC-521	5GA-D1	① ②
C6	270			SI270	D6-271	LT6T27	UC-5327	5GA-T27	①
C7	1000			SI1000	D6-102	LT6D1	UC-521	5GA-D1	③
C8	.03	600		P688N-03	DF-303	CUB6S3	GEM-613	6TM-S3	
C9	.03	600		P688N-03	DF-303	CUB6S3	GEM-613	6TM-S3	
C10	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	④
C11	500			SI500	D6-501	LT6T5	UC-531	5GA-T5	③
C12	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	.2	400		P488N-2		CUB4P2	GEM-402	4TM-P2	⑤
C14	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C15	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C16	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C17	.001	1000		P1088N-001		CUB10D1	GEM-1021	10TM-D1	
C18	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

① Not used in Model 542
②Some versions use 1500mmf in this application
③Some versions use 470mmf in this application
④Not used in some versions
⑤Some versions use .25mfd in this application

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.25meg	½	9A568 ①					Loudness, Tap ⓐ 1meg & 1.5meg
B	Switch							Power On-Off
R2A	5meg	½	9A535	B-88	A47-5meg-Z	Q13-141	U65	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	250K	½	9A537	B-50	A47-250K-S	Q11-130	U46	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4	100	½	9B567			WPK100		D. E. P. Balance

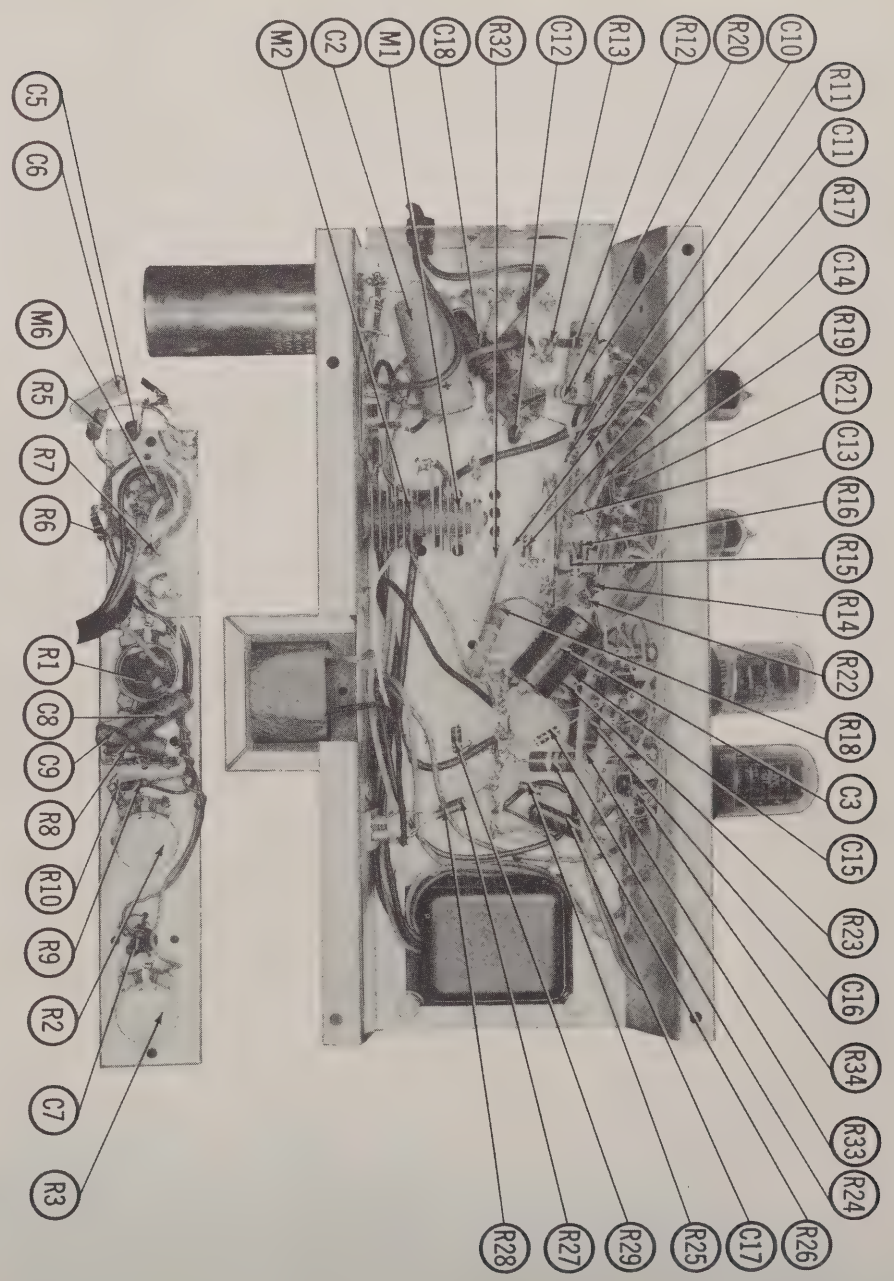
Note 1. Part # 9A536 used in Model 542

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R5	330K	1		①
R6	470K			①
R7	100K 5%			①
R8	100K 5%			
R9	100K 5%			
R10	100K 5%			
R11	47K			
R12	1000Ω			
R13	2700Ω			②
R14	100K			
R15	47K			
R16	1meg			
R17	470K			
R18	12K	2		③
R19	2.2meg			
R20	470Ω			
R21	47K			
R22	100K			
R23	100K			
R24	470K			
R25	470K			
R26	220Ω	2		

CHASSIS—BOTTOM VIEW



PARTS LIST & DESCRIPTION (continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R27	1000Ω			
R28	1000Ω			
R29	10K			④
R30	1000Ω			⑤

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R31	47Ω			
R32	220Ω	5		⑥
R33	68Ω			
R34	68Ω			

①Not used in Model 542
②Some versions use 1000Ω in this application
③Some versions use 10K in this application
④Some versions use 3900Ω in this application
⑤Some versions use 2200Ω in this application
⑥Some versions use 100Ω in this application

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @.4A	120V .200A	6.3V @1.5A	2A102 (440015)						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Columbia Records PART NO.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8600Ω CT	3-4Ω	3A218	Z1404 ①	A-2936①	AU-606	A-3824	26S59	S-55X	①Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Columbia Records PART NO.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	1A123 ①	10A6A	① Part #1A107 (8") used in Model 542
SP2	4"	PM	3-4Ω	1A122	4A1	② Not used in Model 542
SP3	4"	PM	3-4Ω	1A122	4A1	
SP4	4"	PM	3-4Ω	1A122 ②	4A1	

COILS

ITEM No.	USE	REPLACEMENT DATA Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Speaker Choke	21A102					

RECTIFIER

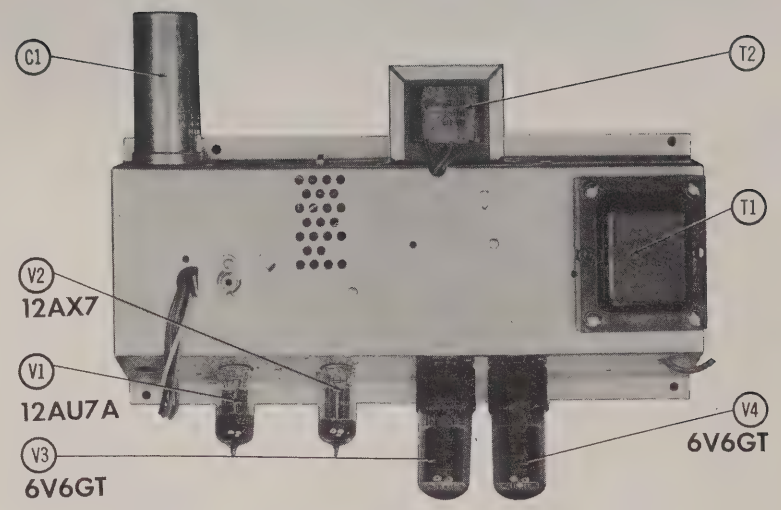
ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.072A	10A611①③	1101A ①	RS100A ①	100A ① M150②	①Selenium Type ②Silicon Type ③Part #10A612 used in Model 542
M2	.072A	10A611 ①③	1101A ①	RS100A①	100A ① M150 ②	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Columbia Records PART NO.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M3		118-TS	N8-1 and N8-3	56	PT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—TOP VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Columbia Record PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M4	(78rpm)	† CRA-55 or ♦CRA-55D	† S64S or ♦W64D	† Jewel ♦ Diamond
	(LP)	† CRA-55LP or ♦CRA-55LPD	† W64MGS or ♦W64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Record PART No.	NOTES
M5	Lamp	19A586	Indicator, #47 (Not used in some versions)
M6	Switch	19A585	Function, Rotary Wafer Type (Not used in Model 542)

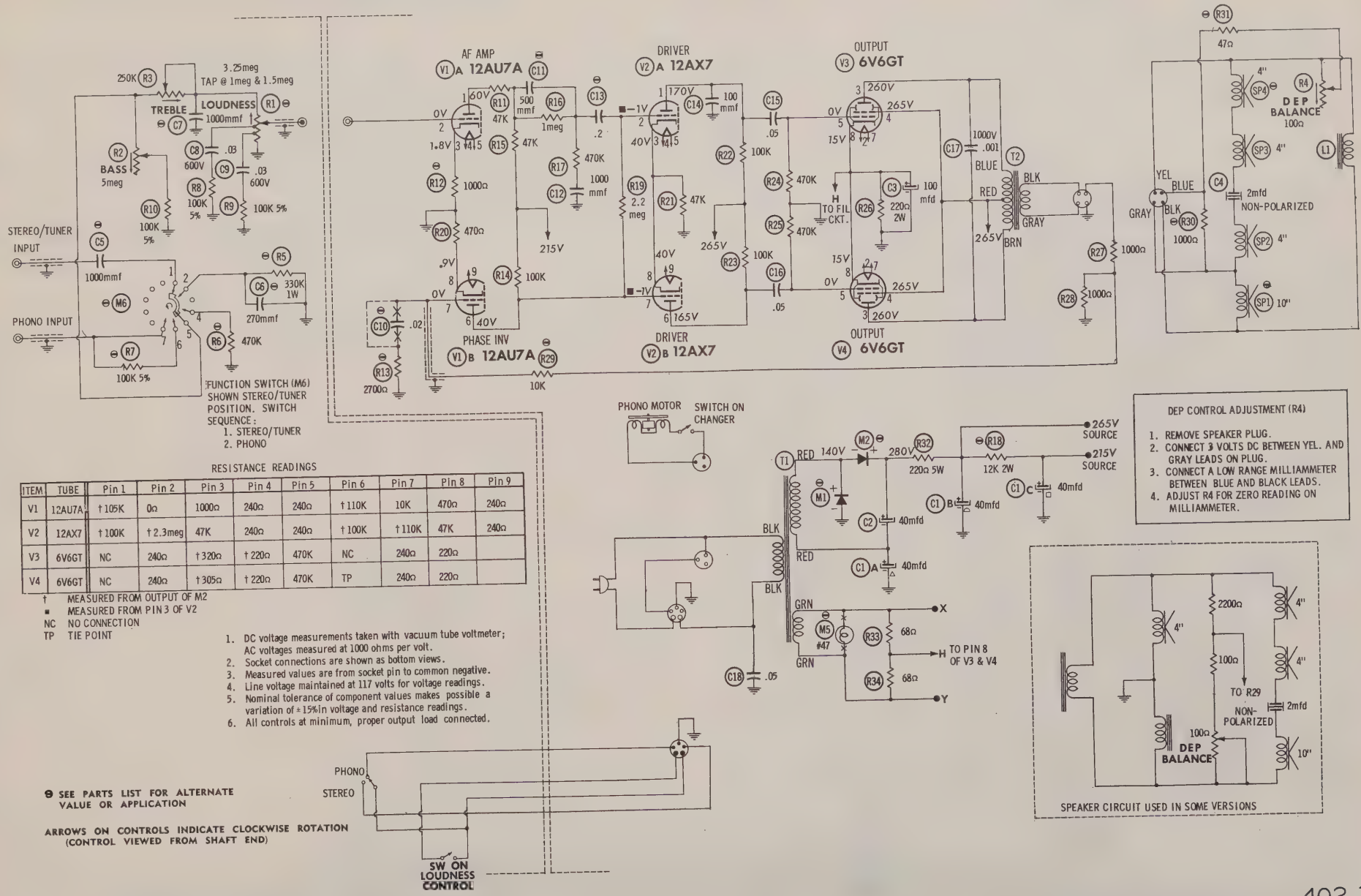
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8A477	
Cabinet	17A975	Mahogany, Model 582
Cabinet	17A972	Mahogany, Model 542
Cabinet	17A976	Blonde, Model 582
Cabinet	17A973	Blonde, Model 542
Cabinet	17A977	Walnut, Model 582
Cabinet	17A974	Walnut, Model 542

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



*FUNCTION SWITCH (M6) SHOWN STEREO/TUNER POSITION. SWITCH SEQUENCE:
1. STEREO/TUNER
2. PHONO

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7A	†105K	0Ω	1000Ω	240Ω	240Ω	†110K	10K	470Ω	240Ω
V2	12AX7	†100K	†2.3meg	47K	240Ω	240Ω	†100K	†110K	47K	240Ω
V3	6V6GT	NC	240Ω	†320Ω	†220Ω	470K	NC	240Ω	220Ω	
V4	6V6GT	NC	240Ω	†305Ω	†220Ω	470K	TP	240Ω	220Ω	

† MEASURED FROM OUTPUT OF M2
■ MEASURED FROM PIN 3 OF V2
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

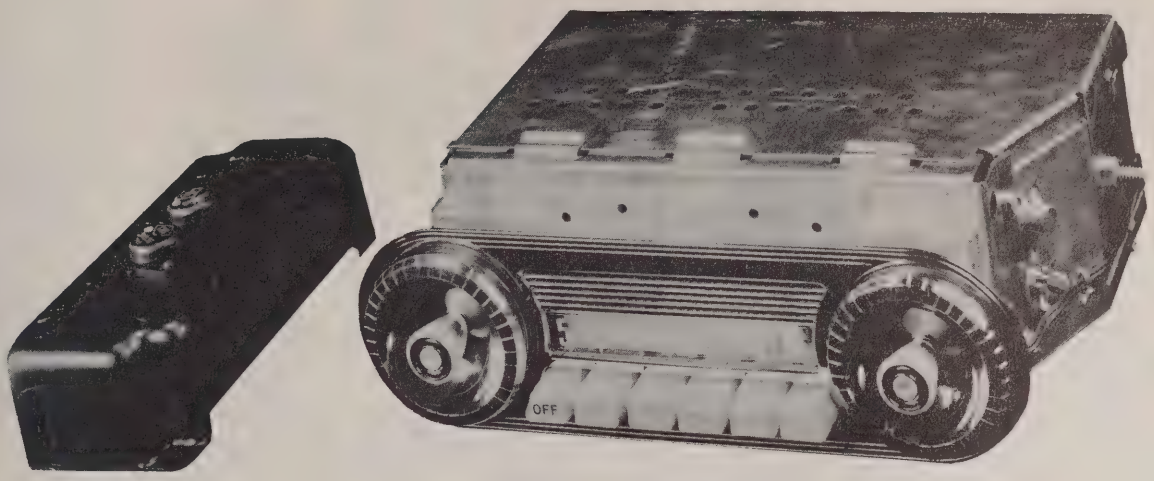
DEP CONTROL ADJUSTMENT (R4)

1. REMOVE SPEAKER PLUG.
2. CONNECT 3 VOLTS DC BETWEEN YEL. AND GRAY LEADS ON PLUG.
3. CONNECT A LOW RANGE MILLIAMMETER BETWEEN BLUE AND BLACK LEADS.
4. ADJUST R4 FOR ZERO READING ON MILLIAMMETER.

9 SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958



TRADE NAME	Edsel Model 85SE (For 1958 Edsel Automobiles)
MANUFACTURER	Stromberg-Carlson, National Service Dept., 1400N. Goodman St., Rochester 3, N.Y.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12AF6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier 12EL6 Det.-AVC-AF Amp., 12K5 Driver
POWER SUPPLY	12 Volt Storage Battery — RATING 1.6 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2) Low side to chassis.	262.5KC (400~ Mod.)	High Freq. end.	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6	" " " "
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, remove escutheon, dial background and dial lamp to expose tuning cores (A7, A8, A9).						
3.	"	Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high freq. end stop.	Across Voice Coil	A7, A8, A9	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement is obtained.
4.	"	"	1400KC	1400KC	"	A10	"

SENSITIVITY ADJUSTMENT (R3)

Connect a signal generator thru dummy (Fig. 1) to antenna receptacle. Tune the gnerator to 1400KC, 400~ modulation, 5 microvolts output. Replace speaker with a 4Ω 2W carbon resistor. Connect an output meter across the resistor and adjust R3 for a reading of 2 volts. This is equivalent to an output of 1 watt. R3 should be adjusted on the counterclock wise side of the peak to prevent overbiasing V1.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

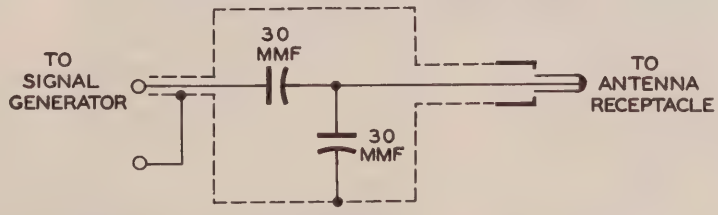


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H453

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N155	Output	CBS-2N155				Alternate type 2N157
X2	2N155	Output	CBS-2N155				Alternate type 2N157

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12AF6	
V2	Converter	12AD6	
V3	IF Amplifier	12AF6	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC-AF Amp.	12EL6	
V5	Driver	12K5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■250	16	111001-003	AFH2-02-05		WP200.7			R2564*
B	▲250	16							
C2	500	3	111001-004	PRS6V500	BR500-6	TC605	TD-500-6	MTH-0650	TVA-1103
C3	500	3	111001-004	PRS6V500	BR500-6	TC605	TD-500-6	MTH-0650	TVA-1103

*Non-Catalog Item

FIXED CAPACITORS

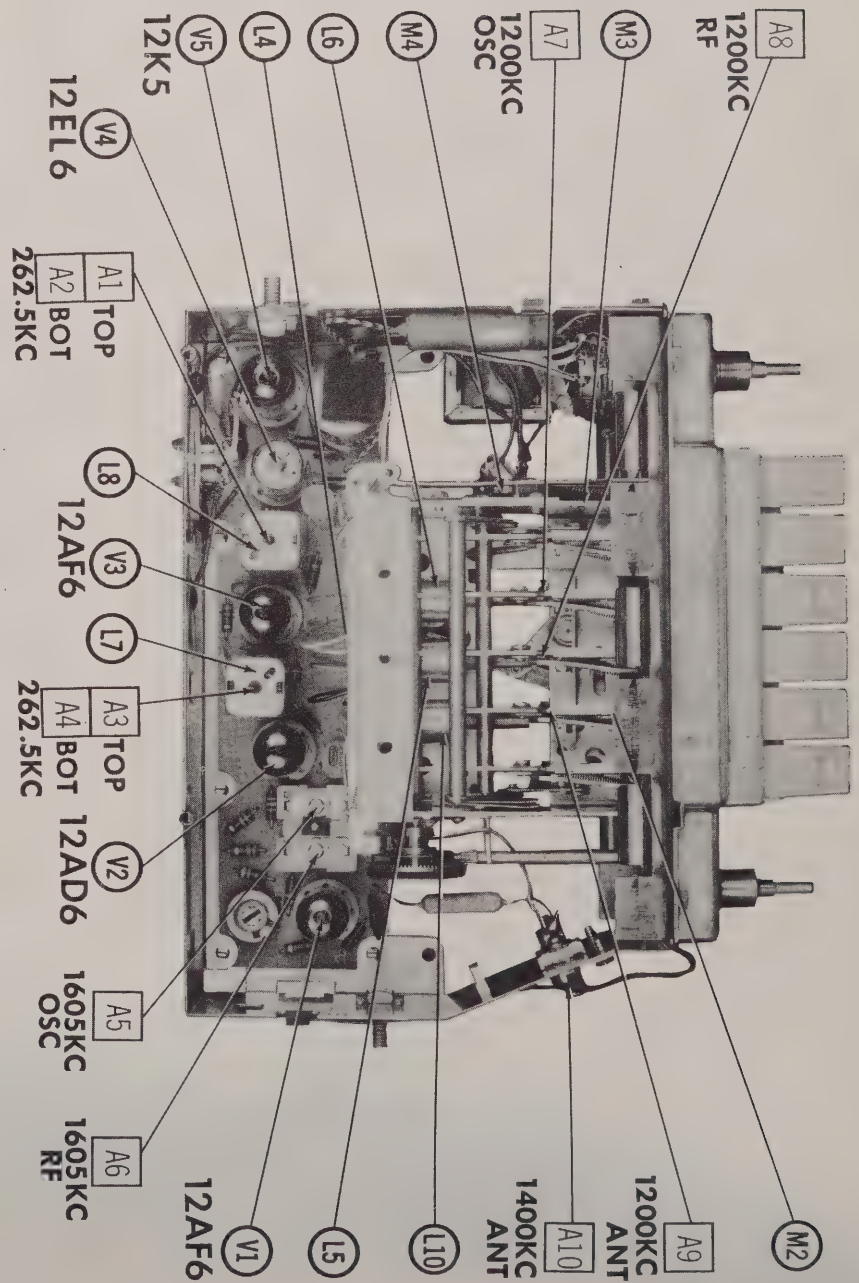
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	5-80		110000-001						
C5	10000		110002-026	BPD-01	DD-103	BY10S1	DC511	5HK-S1	
C6	10000		110919-000	BPD-01	DD-103	BY10S1	DC511	5HK-S1	
C7A	50-230		110000-011						
B	375-445		110000-011						
C	47		110000-011						
C8	6.8		110002-057	NP0-DI6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	NP0
C9	680		110915-000	1469-00068	D6-681	1R5T68		MS-368	10%
C10	4700		110002-054	BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C11	6.8		110907-000	NP0-SI6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	10%
C12	68		110002-043	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C13	220		110921-000	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C14	4700		110920-000	BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C15	.033	200	110003-002	P288N-033		BC-2S33J	GEM-4133	2SE-533	
C16	680		110002-050	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C17	10000		110919-000	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18			110000-022						
C19			110000-021						
C20			110000-020						
C21	5	50	110628-000	P288N-5		CUB2P5	GEM-205	2TM-P5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch		145000-001					Tone Switch
B	1meg	½						Volume, Tap@300K
R2	20Ω	1(WW)	145000-010					Speaker Fader
R3	3000Ω	2(WW)	145000-030					Sensitivity
R4	250Ω	2(WW)	145000-020		39-300		FL250	Transistor Bias
R5	250Ω	2(WW)	145000-020		39-300		FL250	Transistor Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	NOTES
R6	10meg		554002-106	
R7	12K		554001-123	
R8	1200Ω		554001-122	
R9	4700Ω		554002-472	
R10	22meg		554002-226	
R11	3.3meg		554001-335	
R12	3.3meg		554001-335	
R13	6800Ω		554002-682	
R14	33K		554002-333	
R15	10meg		554002-106	
R16	47K		554002-473	
R17	2.2meg		554001-225	
R18	39K		554001-393	
R19	10K		554002-103	

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	NOTES
R20	100K		554002-104	
R21	1meg		554002-105	
R22	1meg		554002-105	
R23	68Ω		554002-680	
R24	1000Ω		554002-102	
R25	3.3meg		554002-335	
R26	15Ω		554001-150	
R27	270Ω		554002-271	
R28	22Ω		554002-220	
R29	18ΩCold		149559-000	
R30	270Ω		554002-271	
R31	3300Ω		554002-332	
R32	15Ω		554001-150	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	9 :	1	161000-010							
		SEC.2								
		1								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO PRI.1	TURNS RATIO SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3-4Ω CT		161000-020							
	PRI: 2									
	3-4Ω CT	:1								

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Stromberg-Carlson PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	155000-001	69A2	

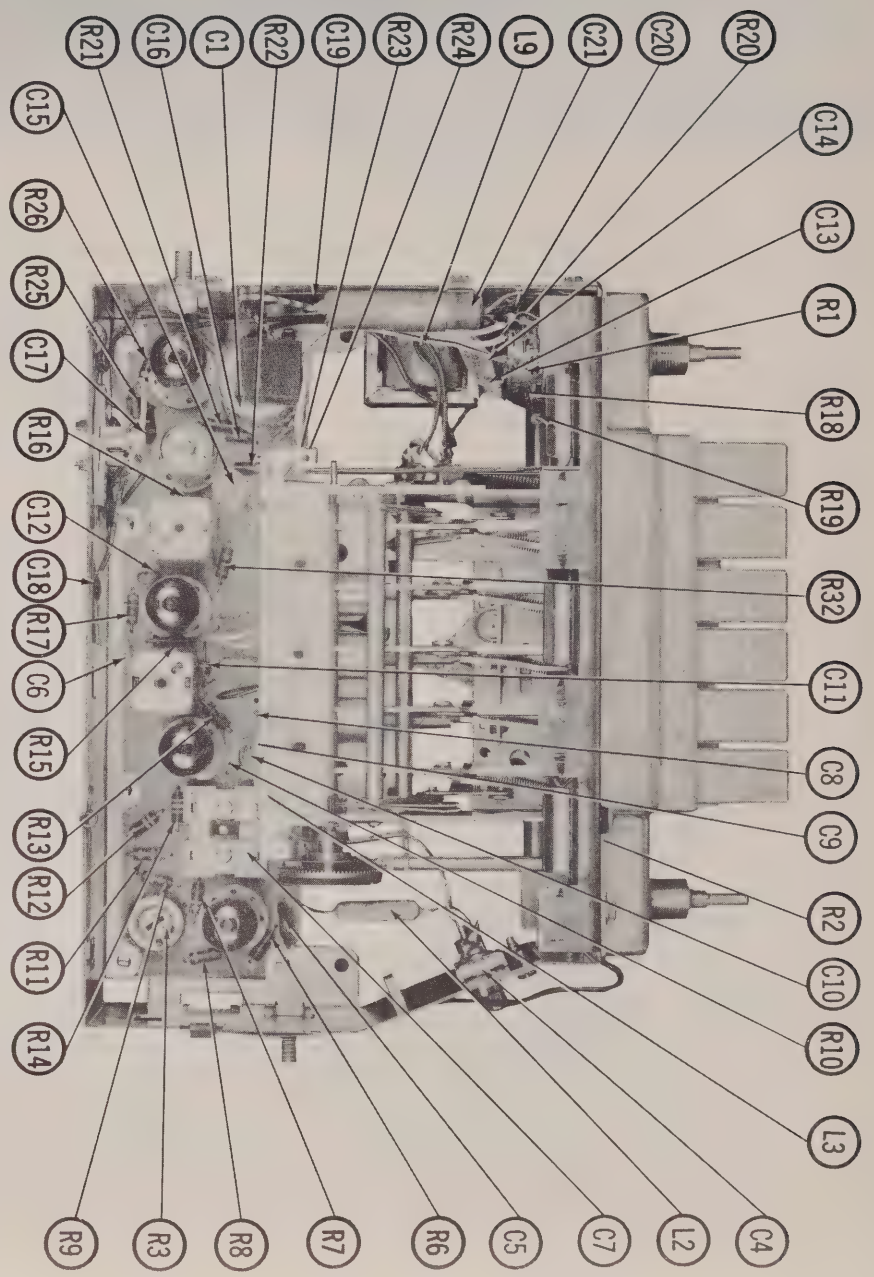
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Stromberg-Carlson PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil						Note 1
L2	Ant. Coil	114000-002	19-3036	TV-180	6176	VP-1	36 Microhenries
L3	RF Choke	114000-004	19-3160	TV-196	6120	VP-5	166 Microhenries
L4	RF Choke	114000-003					29 Microhenries
L5	RF Coil						Note 1
L6	Osc. Coil						Note 1
L7	Input IF	114000-020		BC-344*			
L8	Output IF	114000-030		BC-346*	13-PH6*		

Note 1 Part of tuner M3

* Drill hole in printed circuit for bottom slug adjustment.

CHASSIS— TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	1.5A	.7Ω	.008HY	161000-001						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V		128000-001	30707.5 (7AG 7½A 32V)	155009	SFE7½ (7½A 32V)	HDH

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Dial Lamp	137000-002	#1891
M3	Tuner	164000-003	Tuner Ass'y.
M4	Switch	171000-168	DPST, On-Off

CABINETS & CABINET PARTS

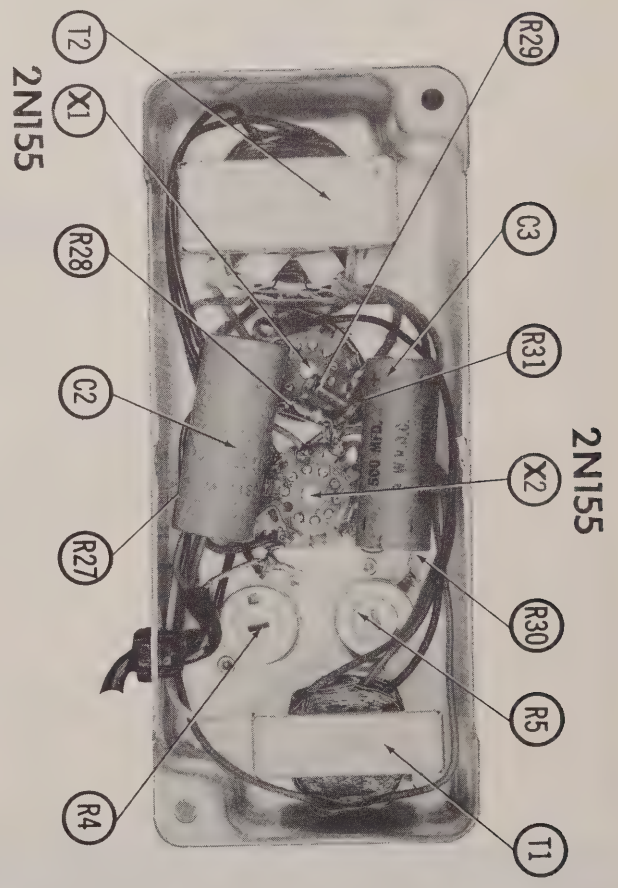
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

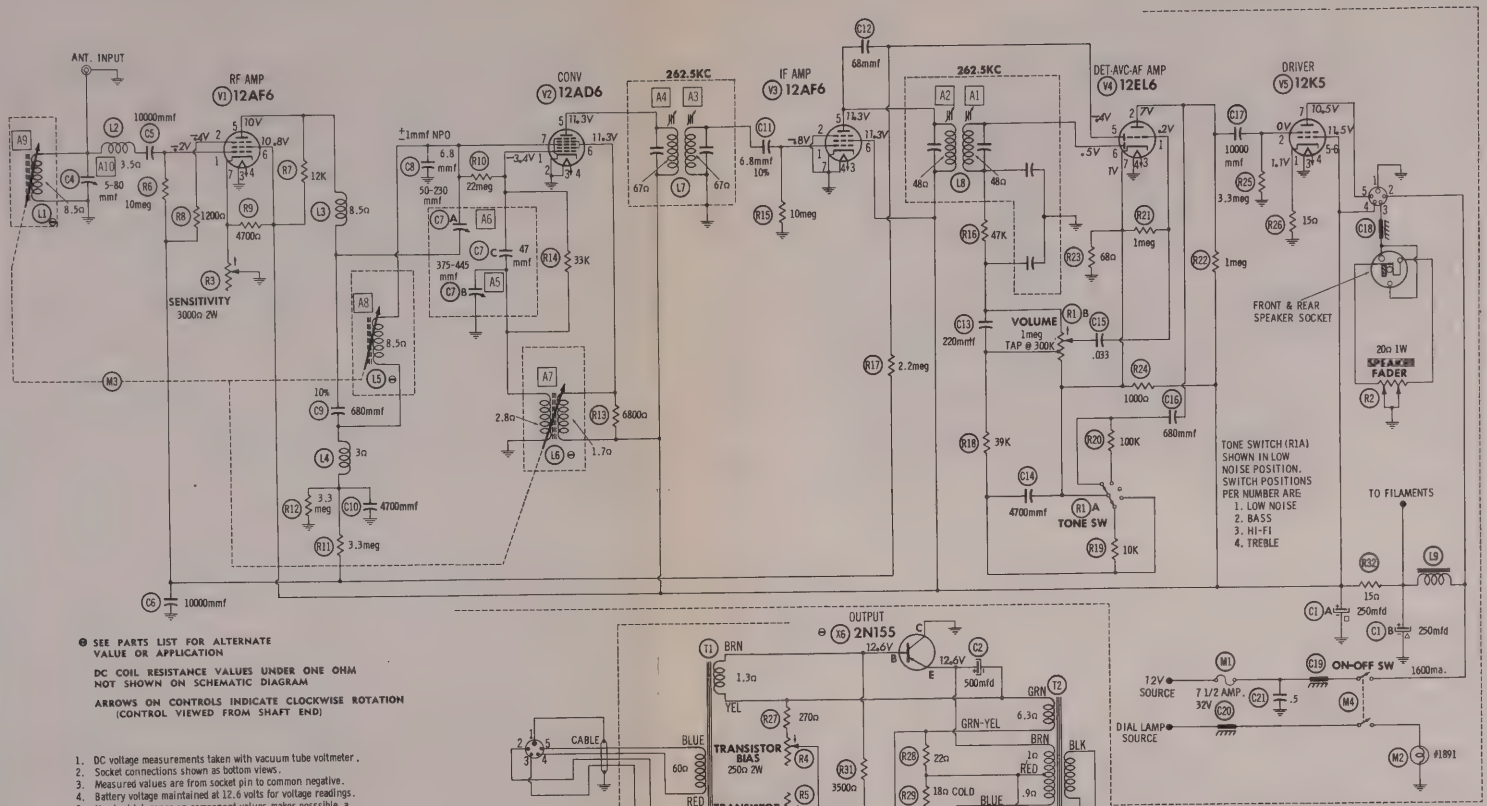
NAME	PART NO.	DESCRIPTION
Pushbutton	107000-001	Left side (Off), Gray
Pushbutton	107000-005	Right side, Gray
Pushbutton	107000-009	4 Used
Pushbutton	107000-002	Left side (Off), White
Pushbutton	107000-006	Right side, White
Pushbutton	107000-010	4 Used
Dial	122000-001	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

POWER SUPPLY – BOT. VIEW





Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AF6	16meg	6meg	0Ω	1.5Ω	†12K	†15Ω	270Ω		
V2	12AD6	33K	0Ω	0Ω	1.5Ω	†82Ω	†17Ω	22meg		
V3	12AF6	10meg	0Ω	1.5Ω	0Ω	†63Ω	†15Ω	0Ω		
V4	12EL6	1meg	†1meg	1.5Ω	0Ω	9meg	550K	68Ω		
V5	12K5	15Ω	3.3meg	0Ω	1.5Ω	†15Ω	†15Ω	†75Ω		

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF L9 AND ON-OFF SWITCH

EMITTER
COLLECTOR
BASE
TRANSISTOR
TERMINAL GUIDE
(REAR VIEW)

TRANSISTOR BIAS ADJUSTMENT (R4, R5)

The bias adjustment should be checked after a transistor is replaced.

Connect a VTVM across the primary of the output transformer T2 (pin 9 of each transistor socket).

Connect a power source of 14.4 volts DC in series with a DC ammeter to the junction of R28, R29 and the red lead of T2. Ground the power source to the audio chassis. Allow a three minute warm-up period.

Adjust R4 and R5 for a zero reading on the VTVM and a 1 Amp reading on the ammeter.

If the VTVM will not indicate zero volts with 1 Amp of current, the transistor associated with the fully clockwise control is weak. If the ammeter will not indicate 1 Amp, both transistors are weak.

PHOTOFACT* Folder

FIRESTONE MODEL 4-C-33
(Code 120-7-PTR15B)

FIRESTONE MODEL 4-C-33
(Code 120-7-PTR15B)

FIRESTONE MODEL 4-C-33
(Code 120-7-PTR15B)

TRADE NAME	Firestone Model 4-C-33 (Code 120-7-PTR15B)
SUPPLIER	Firestone Tire and Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC — RATING 6.8MA @9 Volts DC
TUNING RANGE—BROADCAST	540-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to base of 2N411 (X1) Low side to chassis.	455 KC (400~ Mod)	Tuning gang fully open	Across Voice Coil	A1, A2 A3	Adjustment for maximum output.
2.	"	"	1610KC	"	"	A4.	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

SET 402 FOLDER 9

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-C-33

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N417	Converter		2N417	2N486		
X2	2N409	1st IF Amplifier		2N409	2N483		
X3	2N409	2nd IF Amplifier		2N409	2N483		
X4	2N405	Driver	2N180	2N405	CK872	2N382	
X5	2N407	Output	2N180	2N407	CK878	2N383	
X6	2N407	Output	2N180	2N407	CK878	2N383	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Firestone PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	50	20-106-01	PWE50010	NL10-50	TT50X10	ML10-50		TE-1304
C2	50	10	20-506	PWE10050	NL50-10	TT10X50	ML50-15		R2305*
C3	10	50	20-106-01	PWE50010	NL10-50	TT50X10	ML10-50		TE-1304
C4	50	10	20-506	PWE10050	NL50-10	TT10X50	ML50-15		R2305*
C5	50	10	20-506	PWE10050	NL50-10	TT10X50	ML50-15		R2305*

*Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Firestone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10000		15-103	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	50000		15-503	BPD-05	DF-503				TG-S50	
C8	5			NP0-DI5	TCZ-4R7	C10V5C	TC0-5	ZT-555	5TCCB-V5	NP0 ①
C9	.047	200	30-473-2	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C10	9		15-9G							NP0 5%
C11	.047	200	30-473-2	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C12	.047	200	30-473-2	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C13	3		15-3G							NP0 5%
C14	.047	200	30-473-2	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C15	50000		15-503	BPD-05	DF-503				TG-S50	
C16	10000		15-103	BPD-01	DD-103	BYA6S1	ED-01	DC511	TG-S10	
C17	3000		15-302	BPD-003	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C18	50000		15-503	BPD-05	DF-503	BYA6S1			TG-S50	

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Firestone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	10K	½	80A635	B-15		Q13-116	U-18	Volume
B	Switch			KB-1*		76-1	US-26	

*Use KB-1 on Blue Label control; use KR-1 on Red Label control

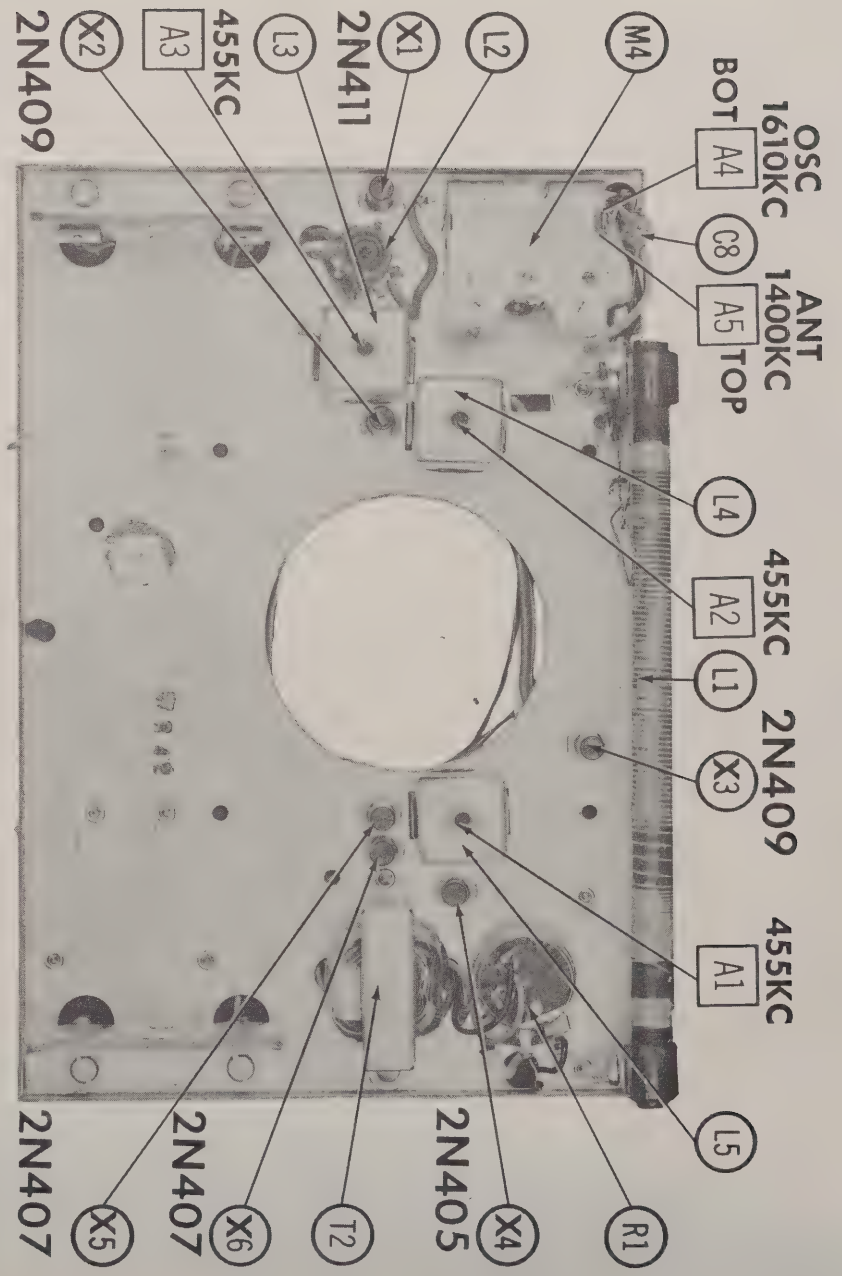
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Firestone PART No.	NOTES
	OHMS	WATT		
R2	6800Ω		60-682S	
R3	18K		60-183S	
R4	1000Ω		60-102S	
R5	3900Ω		60-392S	
R6	12K		60-123S	
R7	3300Ω		60-332S	
R8	560Ω		60-561S	
R9	4700Ω		60-472S	
R10	27K		60-273S	

ITEM No.	RATING		Firestone PART No.	NOTES
	OHMS	WATT		
R11	1000Ω		60-102S	
R12	220K		60-224S	
R13	8200Ω		60-822S	
R14	47K		60-473S	
R15	680 Ω		60-681S	
R16	120Ω 5%		60-121S	
R17	6800Ω		60-682S	
R18	4.7Ω		60-470S	
R19	470Ω		60-471S	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Firestone PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3:	1	75A787							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Firestone PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	560Ω	3-4 Ω	75A788 ①							①Alternate Part #78A788

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Firestone PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	73B637A ①	5A15	① Alternate Part Number 73B657

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		Firestone PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	10A675A					
L2	Osc. Coil	14A767					
L3	1st IF	14-18					
L4	2nd IF	14-19					
L5	3rd IF	14-20					

BATTERIES

ITEM No.	VOLTAGE	Firestone PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V		2R		950		M-13		2LP		6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Firestone PART No.	CBS PART No.	SYLVANIA PART No.	
M2	IN295	IN295	IN60	IN60	Clamper (Pig Tail)
M3	IN295	IN295	IN60	IN60	AM Detector (Pig Tail)

MISCELLANEOUS

ITEM No.	PART NAME	Firestone PART No.	NOTES
M4	Tuning Cap.	35A634	2Gang (Ant. 19-240mmf, Osc. 19-120mmf)

CABINETS & CABINET PARTS

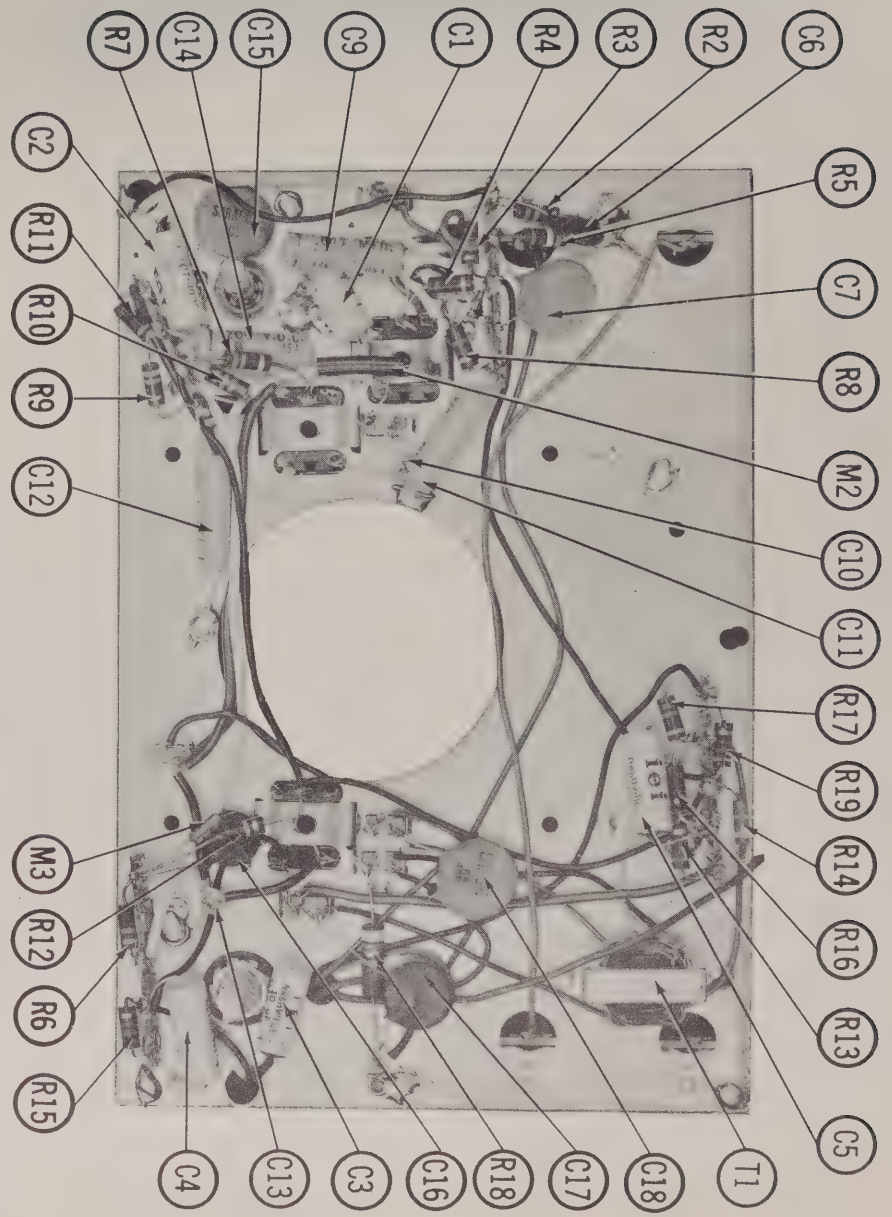
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

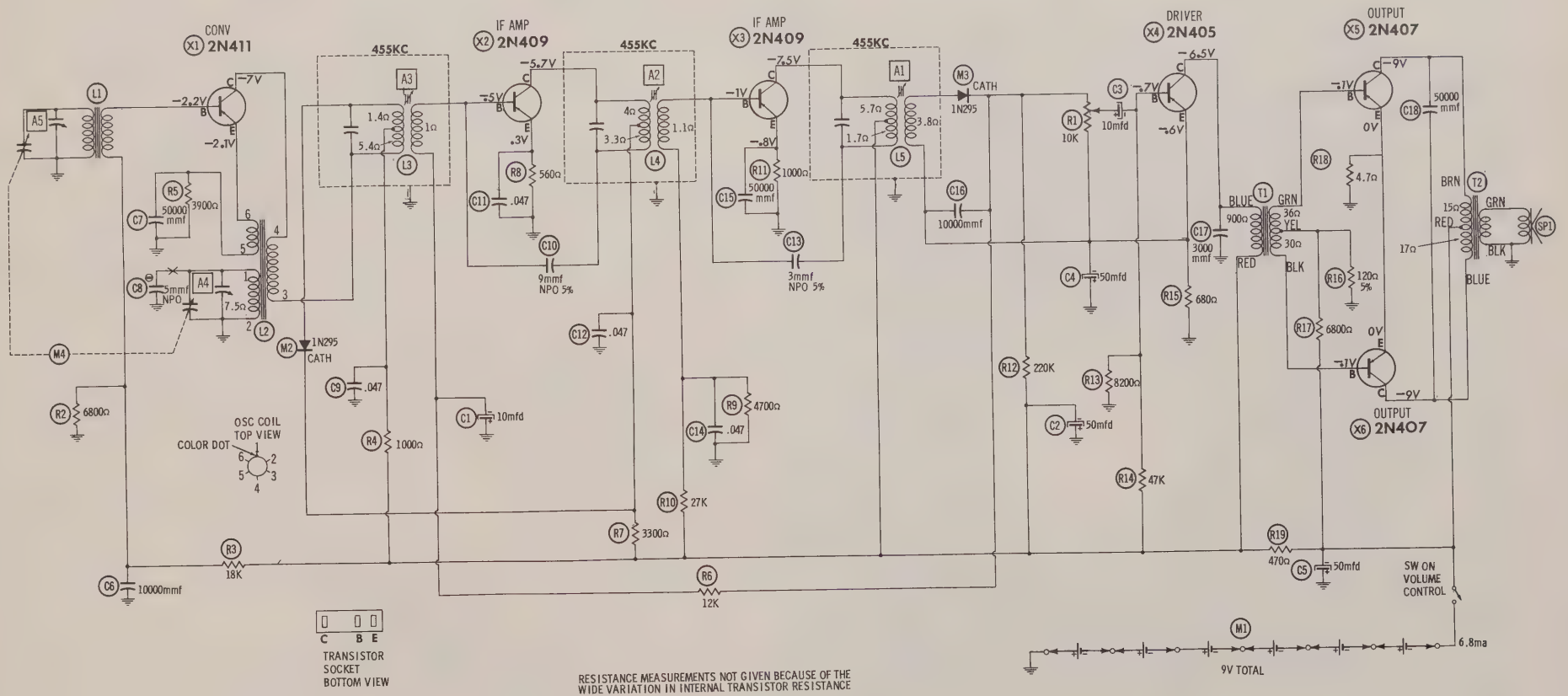
NAME	PART NO.	DESCRIPTION
Knob	47B629	Tuning
Knob	47B629-1	On-Off-Volume.
Case	50-15	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW





Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FONOVOX
MODEL 7060

FONOVOX
MODEL 7060

FONOVOX
MODEL 7060

TRADE NAME	Fonovox Model 7060			
SUPPLIER	Videola-Erie Corp., 75 Front Street, Brooklyn 1, N. Y.			
TYPE SET	AC Operated FM-BC-SW Receiver With 4 Speed Automatic Record Changer			
TUBES (Six)	Types 6AQ8/ECC85 FM RF Amp. - FM Conv., 6AJ8/ECH81 1st FM IF Amp. - AM Mixer -AM Osc., 6BY7/EF85 2nd FM - 1st AM IF Amp., 6T8/EABC80 Ratio Det. - AM Det. - AVC - AF Amp., 6BR5/EM80 Tuning Indicator, 6BQ5/EL84 Output			
POWER SUPPLY	110/125/150/220/240 Volts AC - 60 Cycles		RATING	.58 Amp. @ 117 Volts AC (59 Watts)
TUNING RANGES	BROADCAST SPECIAL	510-1620KC 135-375KC	FREQ. MOD. SHORT WAVE	88-108MC 24-51MC

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE PERPETUUM-EBNER MODEL REX A—PHOTOFACT SET 378 FOLDER 10

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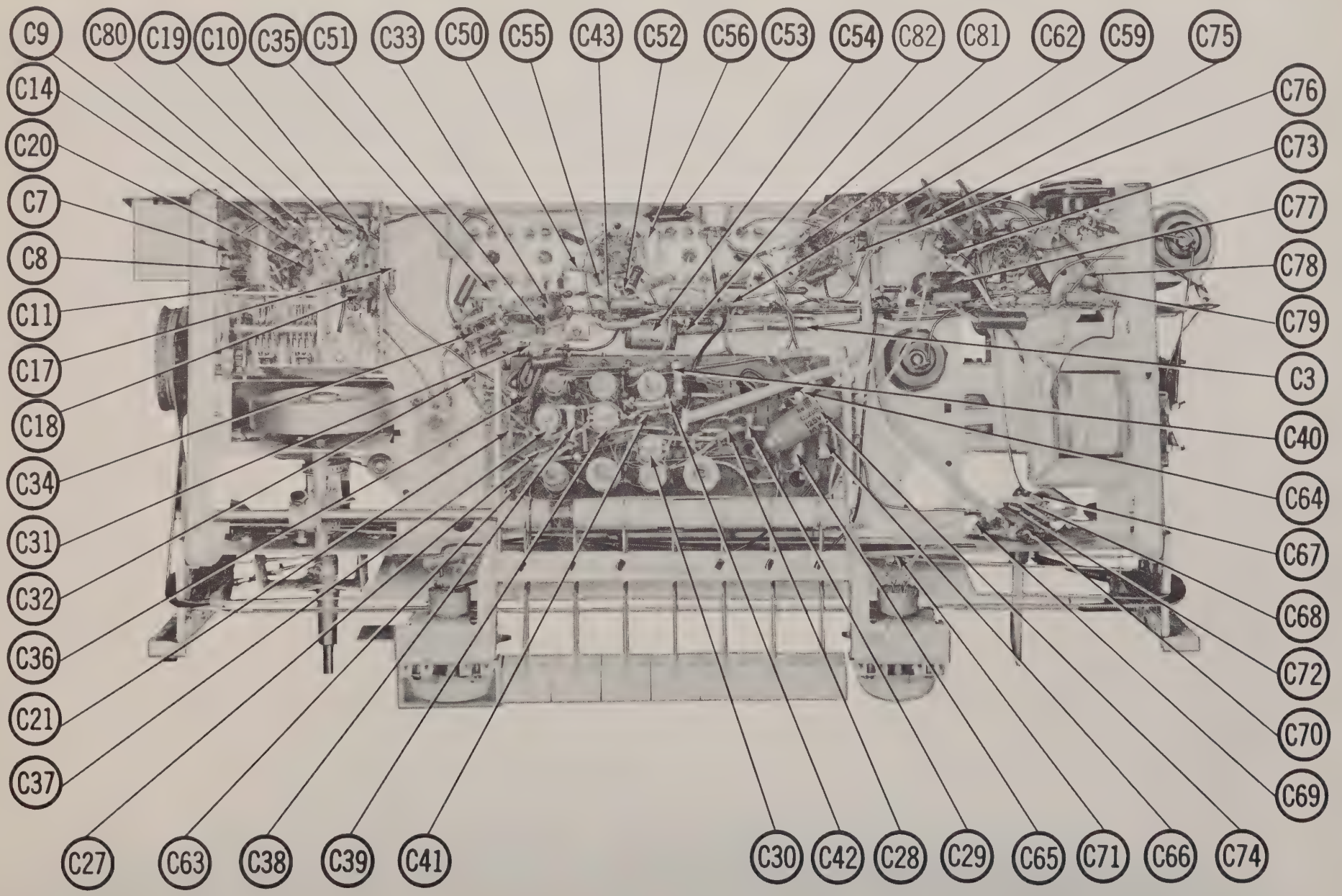
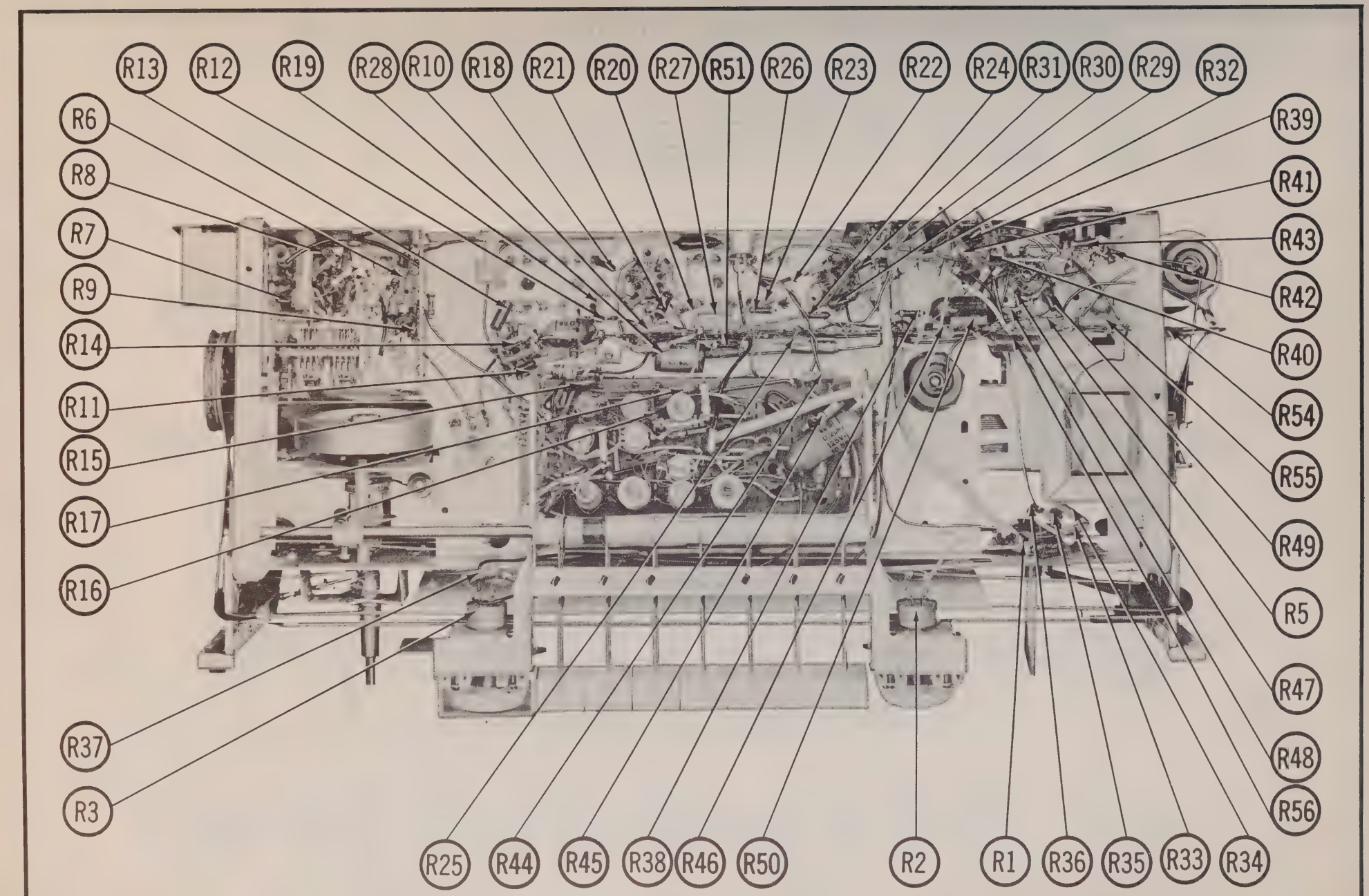
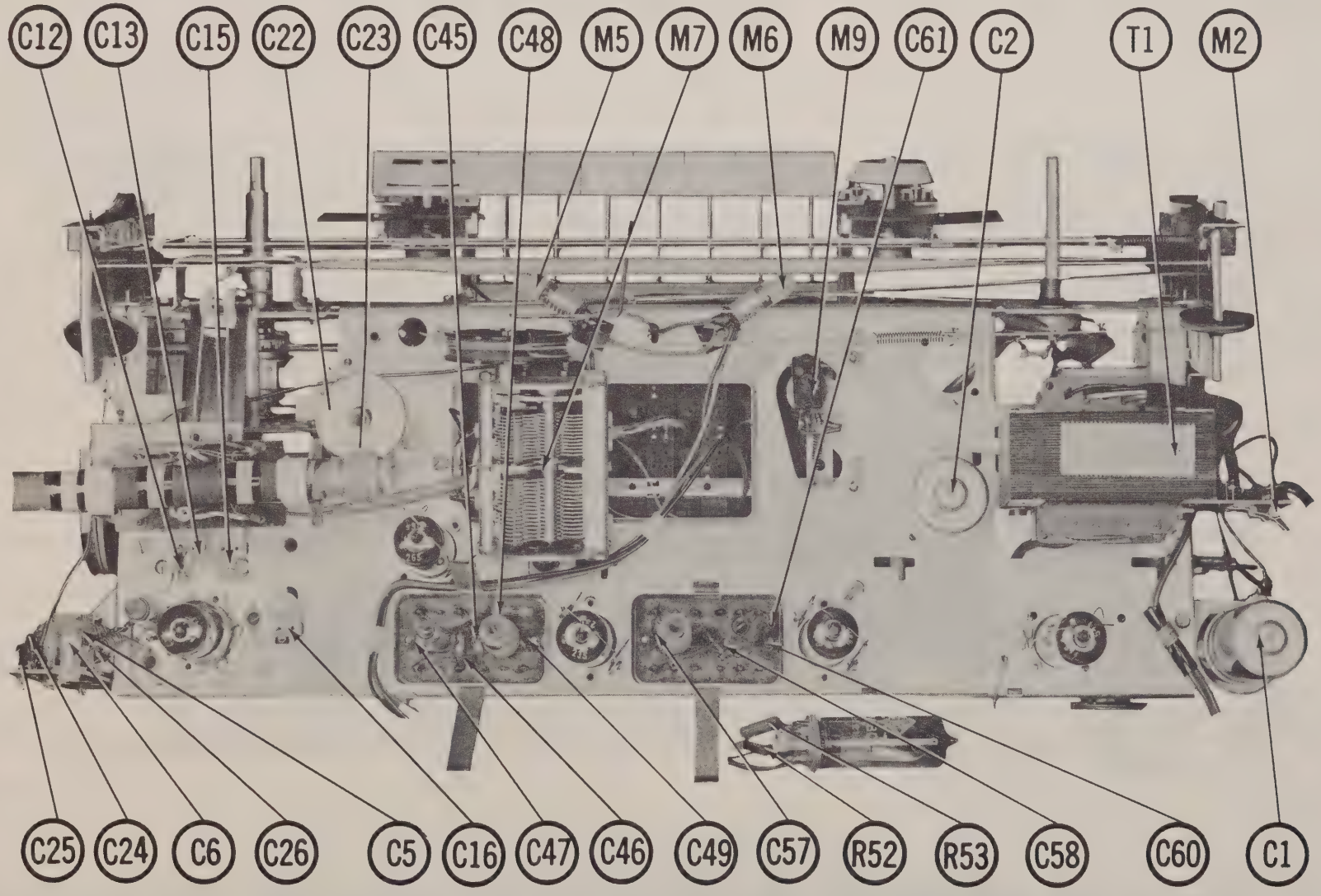


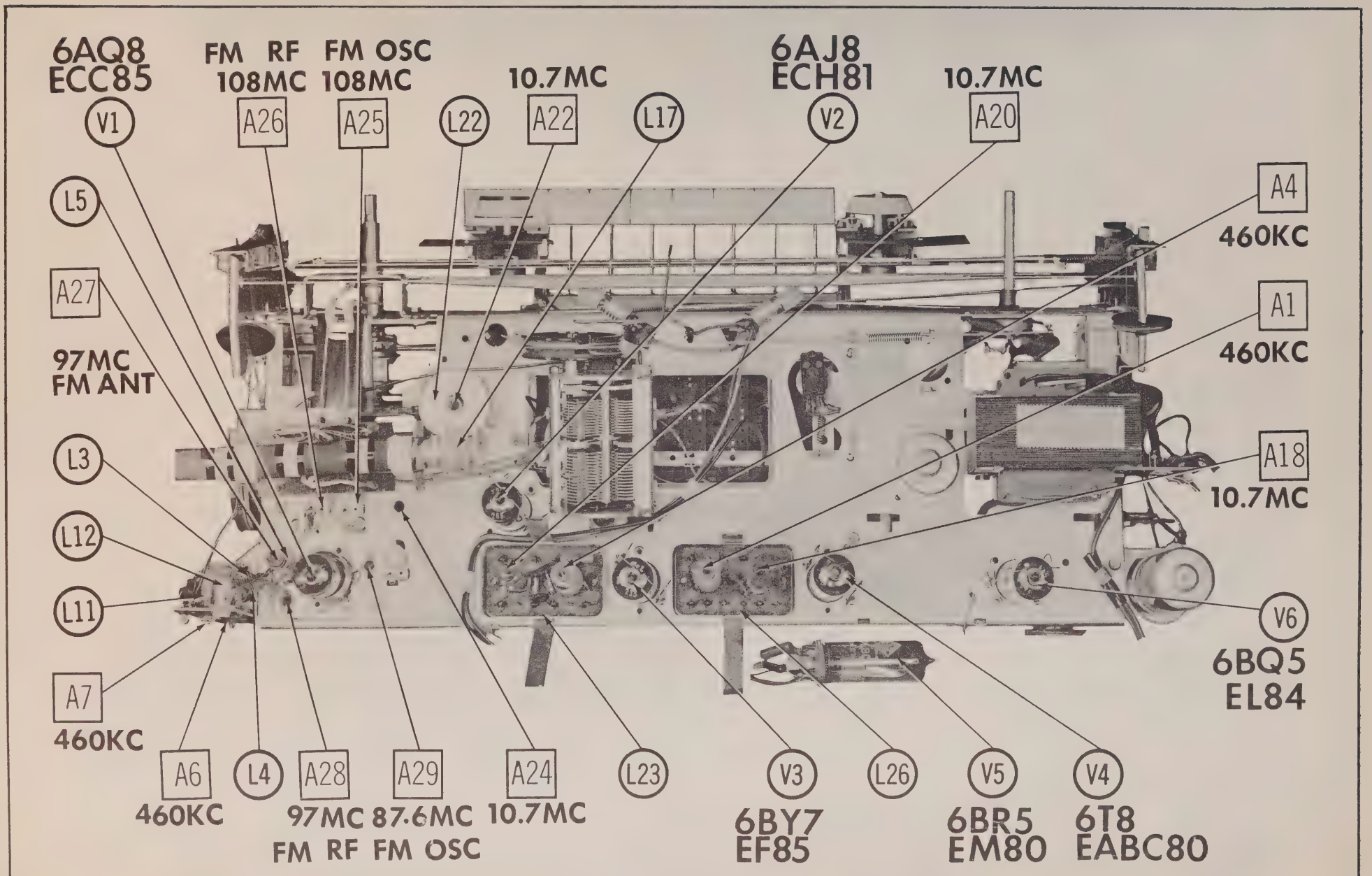
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

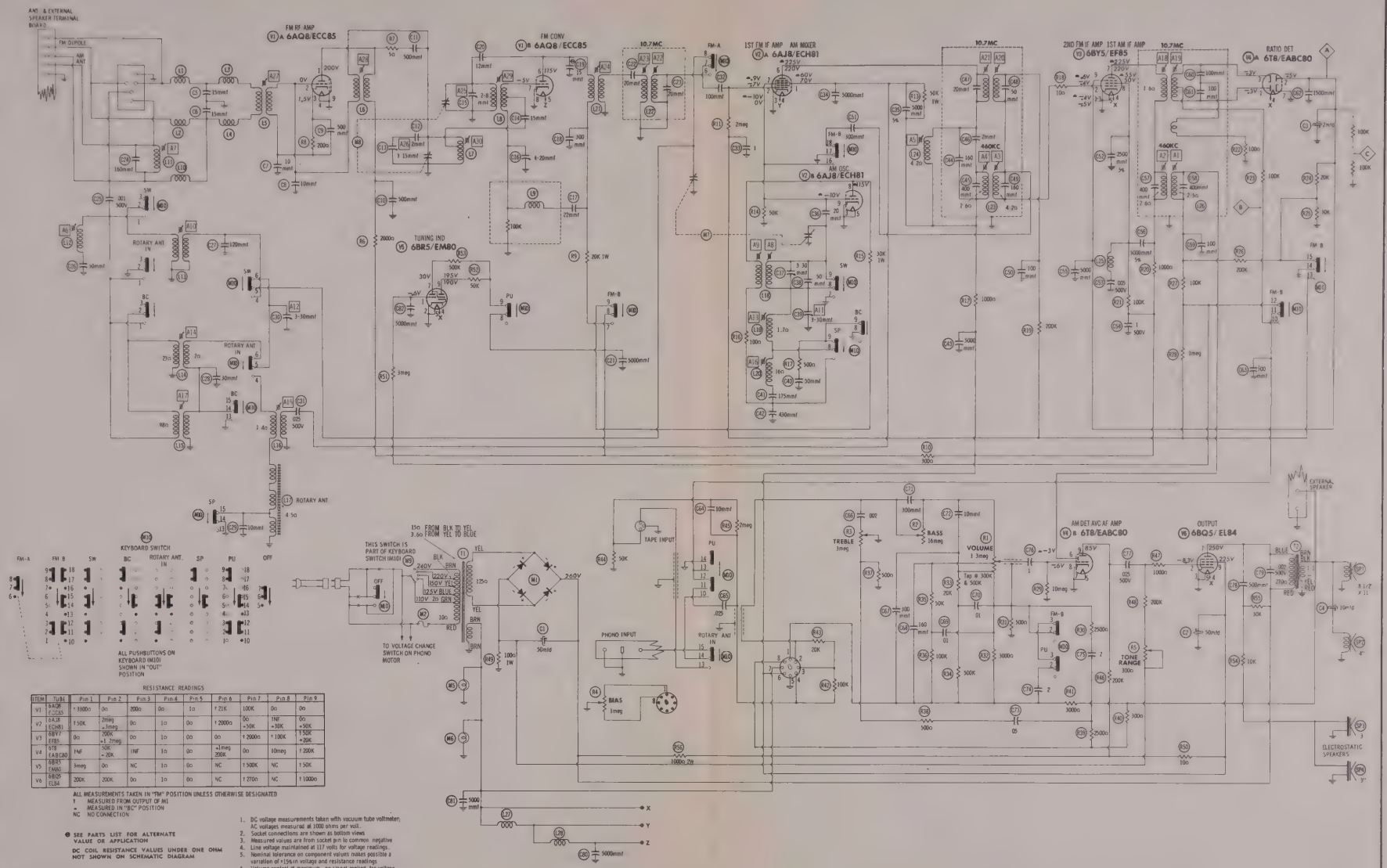


CHASSIS TOP VIEW—CAPACITOR & MISCELLANEOUS IDENTIFICATION



CHASSIS TOP VIEW—ALIGNMENT, INDUCTOR & TUBE IDENTIFICATION

FONOVOX
MODEL 7060



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8 ECC85	↑ 3300Ω	0Ω	200Ω	0Ω	1Ω	↑ 21K	100K	0Ω	0Ω
V2	6AJ8 ECH81	↑ 50K	2meg ± 1meg	0Ω	1Ω	0Ω	↑ 2000Ω	0Ω ± 50K	1MF ± 30K	0Ω ± 50K
V3	6BY5 EF85	0Ω	200K ± 1.2meg	0Ω	1Ω	0Ω	0Ω	↑ 2000Ω	↑ 100K	↑ 50K ± 20K
V4	6T8 EABC80	1MF	50K ± 20K	1MF	1Ω	0Ω	± 1meg 200K	0Ω	10meg	↑ 200K
V5	6BR5 EM80	5meg	0Ω	NC	1Ω	0Ω	NC	↑ 500K	NC	↑ 50K
V6	6BQ5 EL84	200K	200K	0Ω	1Ω	0Ω	NC	↑ 270Ω	NC	↑ 1000Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM OUTPUT OF M1
± MEASURED IN "BC" POSITION
NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

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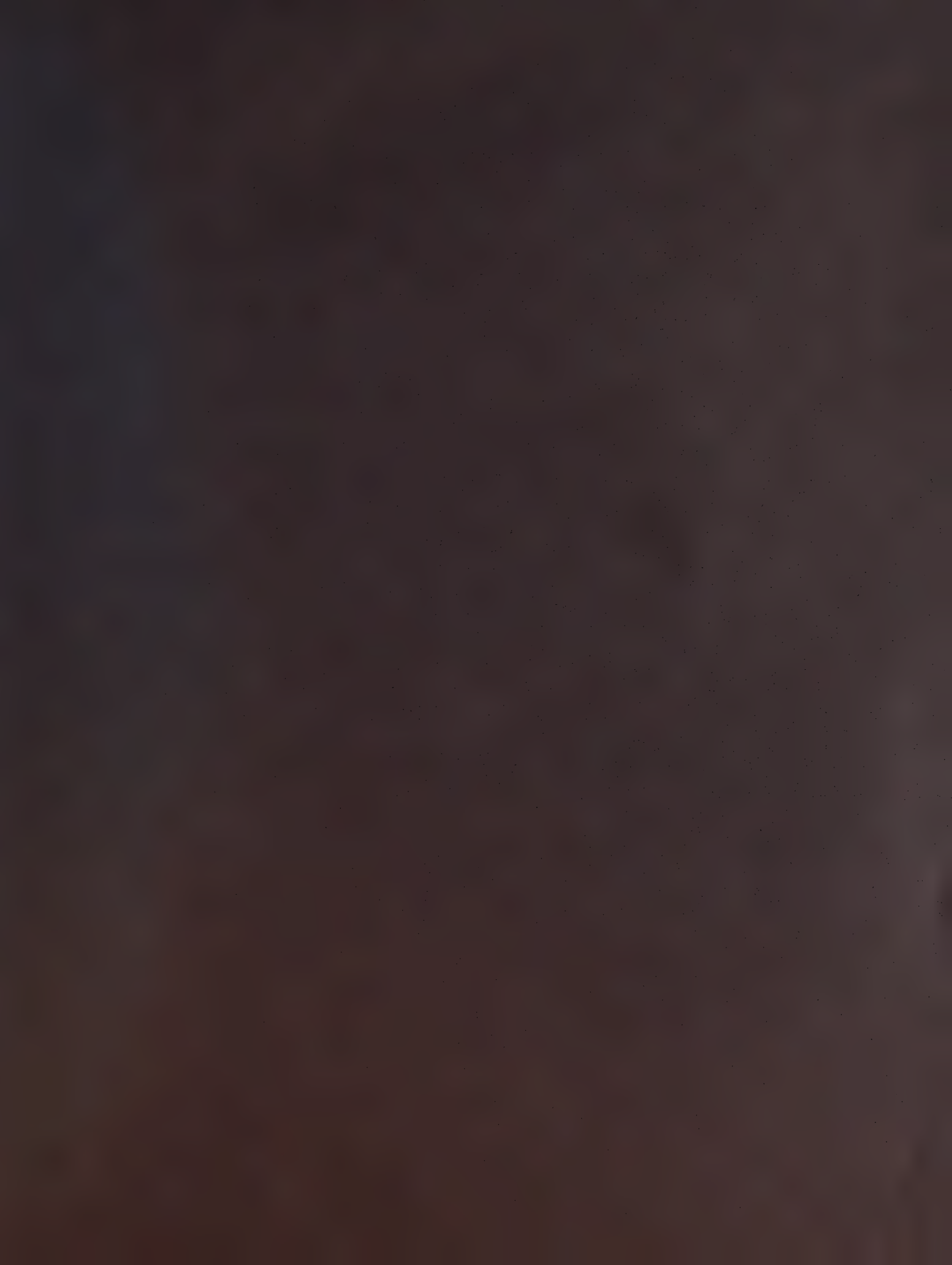


ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 2 (grid) of 6AJ8/ECH81 (V2). Low side to chassis.	460KC (400∿ Mod)	BC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4, A5	Adjust for maximum output.
2.	"	High side to Ant. I terminal Low side to chassis.	"	"	"	"	A6	Adjust for MINIMUM output.
3.	"	High side to Ant. II terminal Low side to chassis.	"	"	"	"	A7	Adjust for maximum output.
4.	500mmf	High side to Ant. II terminal Low side to chassis.	11.8MC (400∿ Mod)	SW	11.8MC	Across voice coil	A8	Adjust for maximum output.
5.	"	"	6.1MC	"	6.1MC	"	A9, A10	"
6.	"	High side to Ant. I terminal Low side to chassis.	1500KC	BC	1500KC	"	A11, A12	"
7.	"	"	556KC	"	556KC	"	A13, A4, A15	"
8.	"	"	150KC	SP	150KC	"	A16, A17	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	200mmf	High side to pin 2 (grid) of 6BY7/EF85 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A18	Adjust for maximum deflection.
10.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
11.	"	High side to pin 7 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A20, A21, A22, A23 A24	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	200mmf	High side to pin 2 (grid) of 6BY7/EF85 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A18	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
10.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A19	Reconnect stabilizing capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A18 for maximum amplitude and straightness of crossover lines.
11.	"	High side to pin 7 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	"	"	"	Vert. Amp. to point Ⓐ. Low side to chassis.	A20, A21, A22, A23 A24	Disconnect capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across FM Antenna terminals.	108MC	FM	108MC	DC probe to point Ⓐ. Common to chassis.	A25, A26	Adjust for maximum deflection.
13.	"	"	97MC	"	97MC	"	A27	"
14.	"	"	"	"	"	"	A28	Adjust for MINIMUM deflection.
15.	"	"	87.6MC	"	87.6MC	"	A29, A30	Adjust for maximum deflection.

FIG. 1

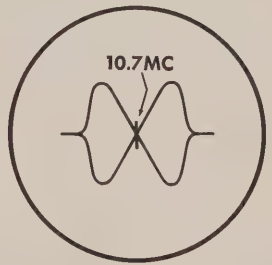
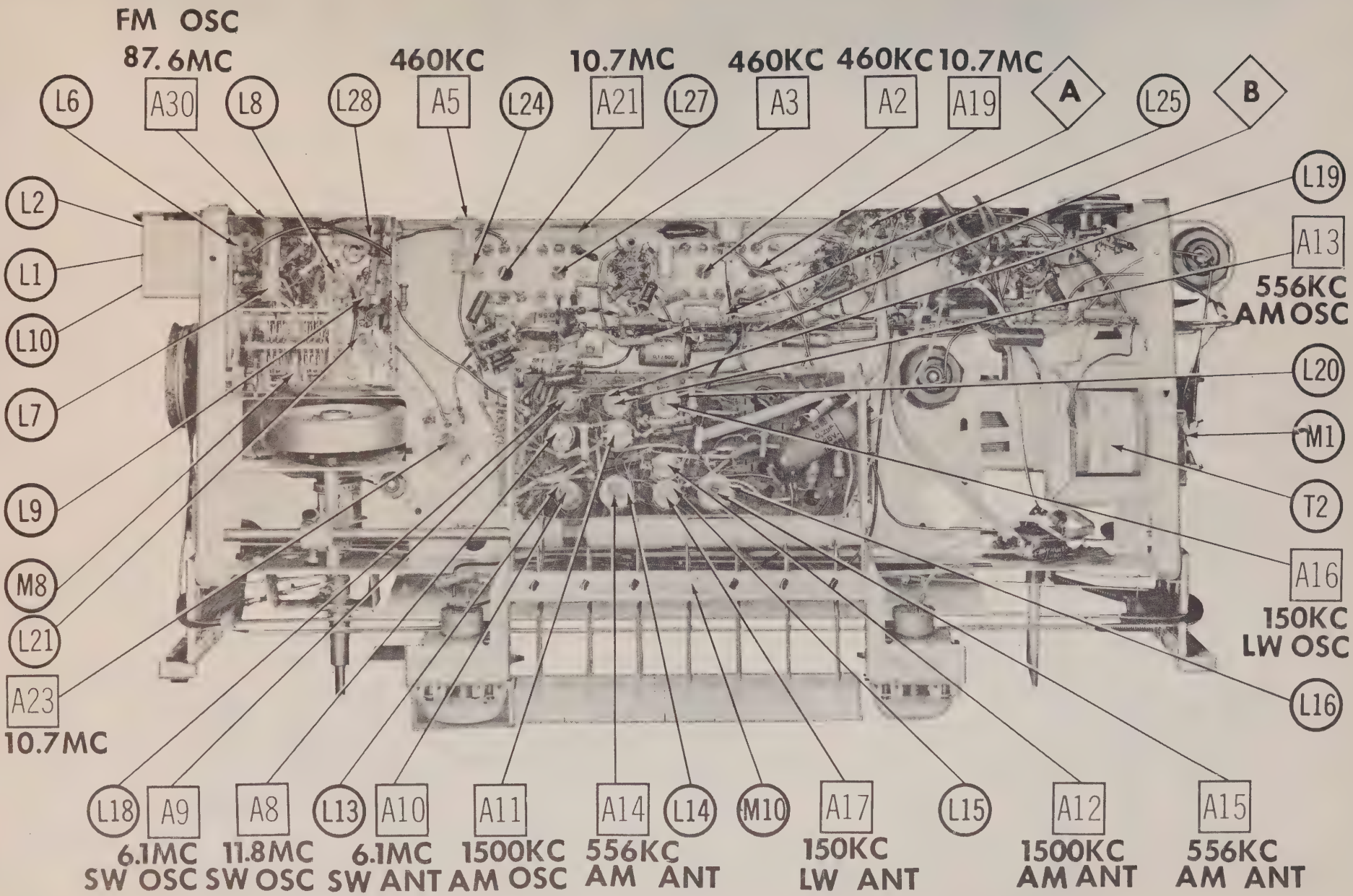


FIG. 2



CHASSIS BOTTOM VIEW—ALIGN, INDUCTOR & MISC IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	6AQ8/ECC85
V2	1st FM IF Amplifier AM Mixer - AM Osc.	6AJ8/ECH81
V3	2nd FM - 1st AM IF Amp.	6BY7/EF85
V4	Ratio Det. - AM Det. - AVC - AF Amplifier	6T8/EABC80
V5	Tuning Indicator	6BR5/EM80
V6	Output	6BQ5/EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	FONOVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	50	385		AFH1-53	A0490	FP137	TMS-58	S-275	TVL-1728
C2	50	385		AFH1-53	A0490	FP137	TMS-58	S-275	TVL-1728
C3	2	80		PRS450V2	BBR4-150	TT150X2		MT-4502	R2547 *
C4	10	35		PRS50V10	BBR10-50	TC32	TD-10-50	MT-0510	TVA-1304

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	FONOVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C6	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C7	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C8	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C9	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C10	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C11	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C12	2			NPO SI 2.2	TCZ-2.2			5TCCB-V22	
C13	3-15								
C14	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C15	2-8								
C16	4-20								
C17	22			SI 22	D6-220	LT6Q22	UC-5422	5GA-Q22	
C18	300			1468-0003	D6-301	LT6T3	MC-241	1FM-33	
C19	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C20	12			SI 12	D6-120	LT6Q12	UC-5412	5GA-Q12	①
C21	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C22	20			SI 20	D6-200	L10Q2	UC-542	5GA-Q2	
C23	20			SI 20	D6-200	L10Q2	UC-542	5GA-Q2	
C24	160			1469-00016		5R5T16		MS-316	
C25	.001	500		P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C26	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C27	120			1469-00012	D6-121	5R5T12		MS-312	
C28	30			SI 30		L10Q3	UC-543	5GA-Q3	
C29	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C30	3-30								
C31	.025	500		P688N-025		CUB6S22	GEM-6125	6TM-S25	
C32	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C33	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C34	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C35	5000			1464-005		1DR5D5	MCE465	MS-25	5%
C36	20			SI 20	D6-200	LT6Q2	UC-542	5GA-Q2	
C37	3-30								
C38	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C39	3-30								
C40	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C41	175								
C42	430			1468-00043		5W5T43		MS-343	
C43	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C44	160			1468-00016		5W5T16		MS-316	
C45	400			1464-0004	D6-401	5R5T4	MCB243	MS-34	
C46	2			NPO SI 2.2	TCZ-2R2			5TCCB-V22	
C47	20			SI 20	D6-200	LT6Q2	UC-542	5GA-Q2	
C48	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C49	160			1468-00016		5W5T16		1FM-316	
C50	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C51	300			1468-0003	D6-301	5W5T3		1FM-33	
C52	2500			1464-0025	D6-252	1R5D25		MS-225	5%

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	FONOVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	.005	500		P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C54	.1	500		P688N-1		CUB6P1	GEM-601	6TM-P1	
C55	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C56	5000			1464-005		1DR5D5	MCE465	MS-25	5%
C57	400			1464-0004	D6-401	5R5T4	MCB243	MS-34	
C58	400			1464-0004	D6-401	5R5T4	MCB243	MS-34	
C59	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C60	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C61	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C62	1500			SI 1500	D6-152	LT6D15	UC-5215	5GA-D15	
C63	500			1468-0005	D6-501	5W5T5	M&245	1FM-35	
C64	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C65	.025	125		P288N-025		CUB6S22	GEM-4125	4TM-S25	
C66	.002	500		P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C67	300			1468-0003	D6-301	5W5T3	MC241	1FM-33	
C68	160			1468-00016		5W5T16		1FM-316	
C69	.01	125		P288N-01	D6-103	CUB2S1	GEM-211	4TM-S1	
C70	.01	125		P288N-01	D6-103	CUB2S1	GEM-211	4TM-S1	
C71	300			1468-0003	D6-301	5W5T3	MC241	1FM-33	
C72	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C73	.05	125		P288N-05	DF-503	CUB2S5	GEM-415	4TM-S5	
C74	.2	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C75	.2	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C76	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C77	.025	500		P688N-025		CUB6S22	GEM-6125	6TM-S25	
C78	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C79	.002	500		P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C80	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C81	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C82	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	

① Some versions may use 15mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	FONOVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.3meg							Volume, Tap @ 300K, 500K
R2	16meg							Bass
R3	3meg							Treble
R4	1meg							Bias
R5	300Ω						U2	Tone Range

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FONOVOX PART No.	NOTES	ITEM No.	RATING OHMS	RATING WATT	FONOVOX PART No.	NOTES
R6	2000Ω				R27	100K			
R7	5Ω				R28	1meg			
R8	200Ω				R29	10meg			
R9	20K	1			R30	2500Ω			
R10	300Ω				R31	500Ω			
R11	2meg				R32	3000Ω			
R12	1000Ω				R33	20K			
R13	50K	1			R34	500K			
R14	50K				R35	50K			
R15	30K	1			R36	100K			
R16	100Ω				R37	500Ω			
R17	500Ω				R38	500Ω			
R18	10Ω				R39	2500Ω			
R19	200K				R40	300Ω			
R20	1000Ω				R41	3000Ω			
R21	100K				R42	100K			
R22	100Ω				R43	20K			
R23	100K				R44	50K			
R24	20K				R45	2meg			
R25	30K				R46	200K			
R26	200K				R47	1000Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	FONOVOX PART No.	NOTES
R48	200K	1		
R49	100Ω			
R50	10Ω			
R51	3meg			
R52	50K			
R53	500K			
R54	10K			
R55	30K			
R56	1000Ω	2		

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA FONOVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	240V Tap ② 220V 150V, 125V & 110V ② .58A	250V ② .080A	6.3V ② 3.2A	NT-BV206E						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FONOVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4400Ω	6-8Ω	AT-BV200				A-2203 ①			① Drill mtg hole

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA FONOVOX PART No.	QUAM PART No.	NOTES
SP1	8½" X 11"	PM	6-8Ω	9000G		
SP2	4"	PM	22Ω	7000G		
SP3	3"	Electrostatic		LSH75		
SP4	3"	Electrostatic		LSH75		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA FONOVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil						
L2	FM Ant. Coil						
L3	FM Ant. Coil						
L4	FM Ant. Coil						
L5	FM Ant. Trans.						
L6	FM RF Trans.						
L7	FM RF Coil						
L8	FM Osc. Coil						
L9	RF Choke						3.4 Microhenries; Wound on 100K Resistor
L10	RF Choke						3.3 Microhenries
L11	IF Trap Coil						
L12	IF Trap Coil						
L13	AM Ant. Trans.						
L14	AM Ant. Trans.						
L15	AM Ant. Trans.						
L16	AM Ant. Trans.						
L17	Loop Stick						
L18	SW Osc. Coil						
L19	BC Osc. Coil						
L20	LW Osc. Coil						
L21	1st FM IF						
L22	2nd FM IF						
L23	3rd FM IF - 1st AM IF						
L24	1st AM IF						
L25	RF Choke		19-1002	BC-563	4606		2.65 Microhenries
L26	Ratio Det. - 2nd AM IF						
L27	Fil. Choke		19-1002	BC-563	4606		2.6 Microhenries
L28	Fil. Choke						2 Microhenries

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FONOVOX PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.068A	B250C100 ①		60-9150 ① ②	D-56 ③	① Selenium Type ② Two Required ③ Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA FONOVOX PART No. FUSE	FONOVOX PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2								

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA FONOVOX PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M3						

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA FONOVOX PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M4		†♦ RX55ISD or ♦ RX55ID	† W-93TPS or ♦ W-93DS	♦ Diamond † Jewel

MISCELLANEOUS

ITEM No.	PART NAME	FONOVOX PART No.	NOTES
M5	Dial Lamp		
M6	Dial Lamp		
M7	Tuning Cap.		AM 2 Gang (Osc. 17-485mmf, Ant. 13-585mmf)
M8	Tuning Cap.		FM 2 Gang
M9	Switch		Toggle Type (Part of Keyboard Assembly)
M10	Switch		Slide Type (Keyboard Assembly)

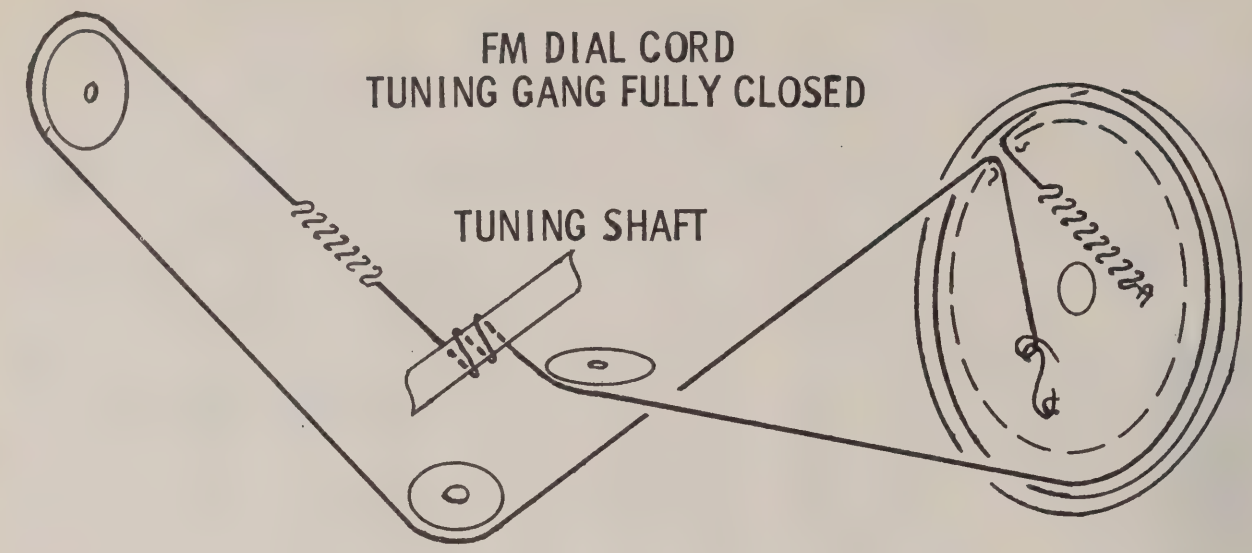
WIRING DATA

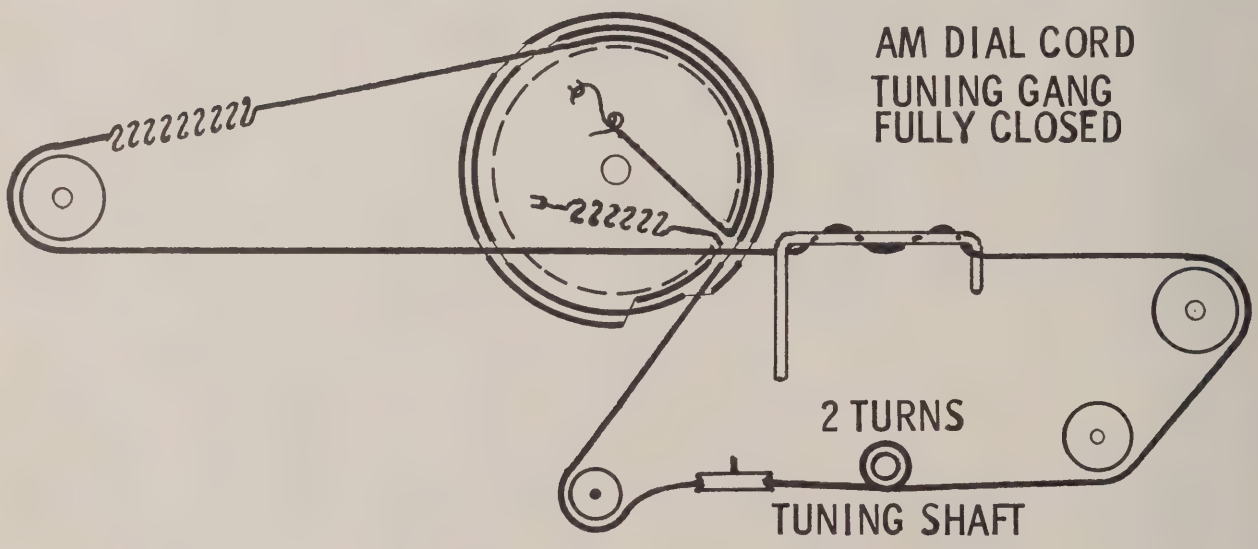
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

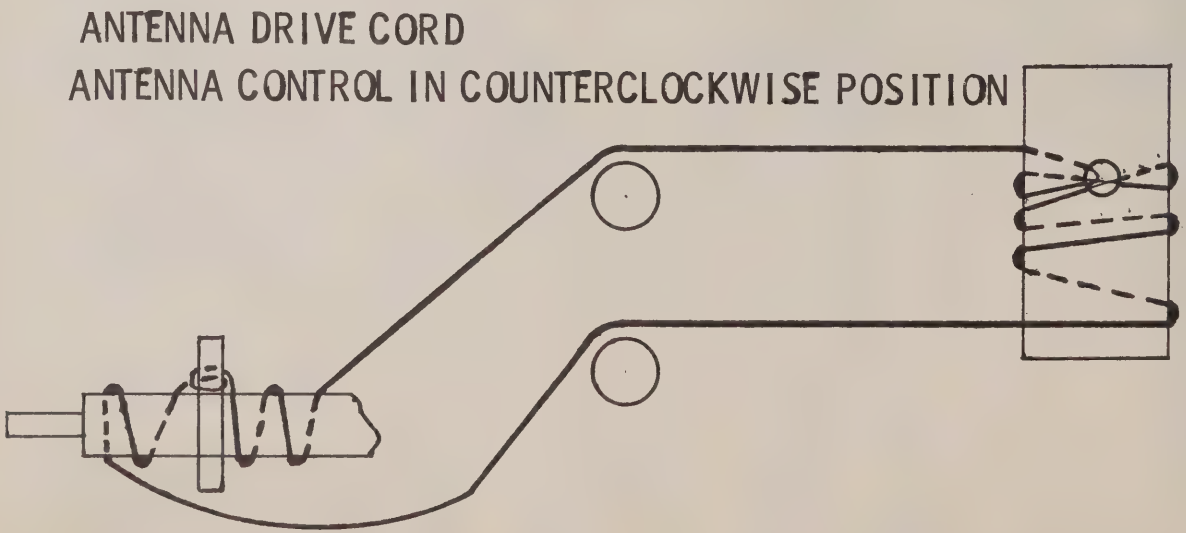
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)


FM DIAL CORD
TUNING GANG FULLY CLOSED
TUNING SHAFT


AM DIAL CORD
TUNING GANG
FULLY CLOSED
2 TURNS
TUNING SHAFT

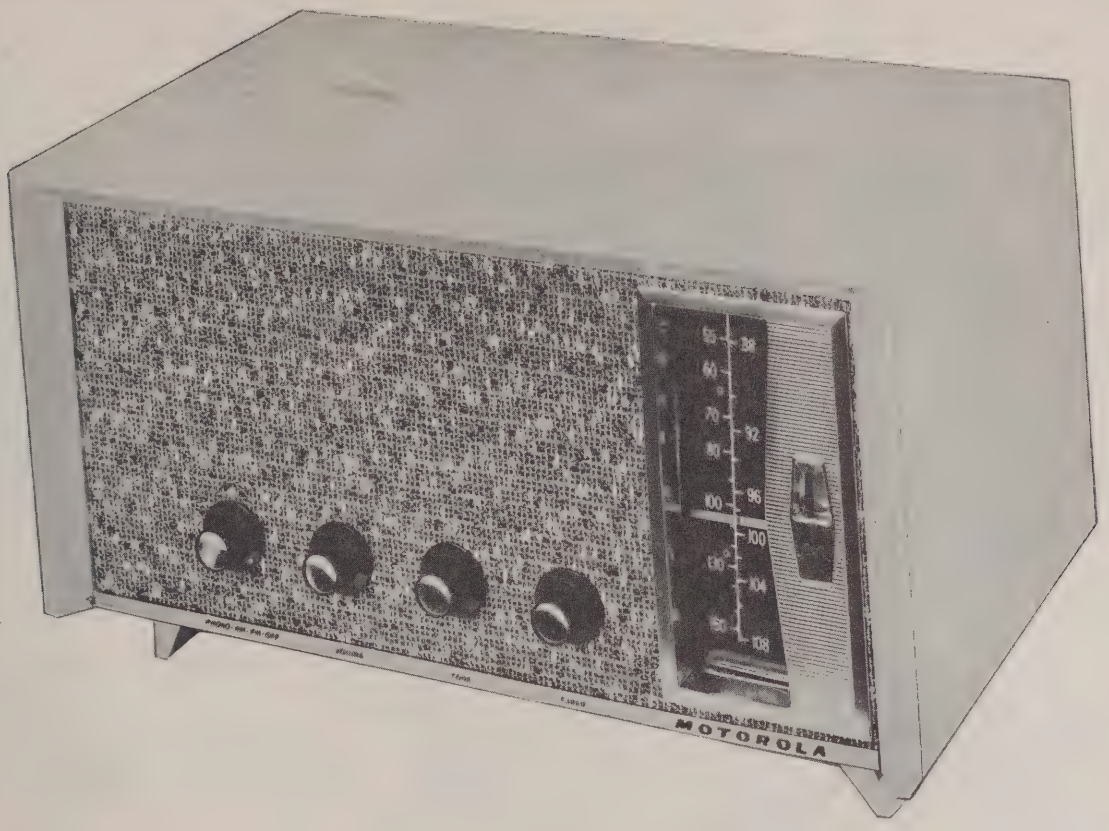

ANTENNA DRIVE CORD
ANTENNA CONTROL IN COUNTERCLOCKWISE POSITION

PHOTOFACT* Folder

*TRADE MARK

MOTOROLA
MODELS 10T28B, M, MC (Ch. HS-589)

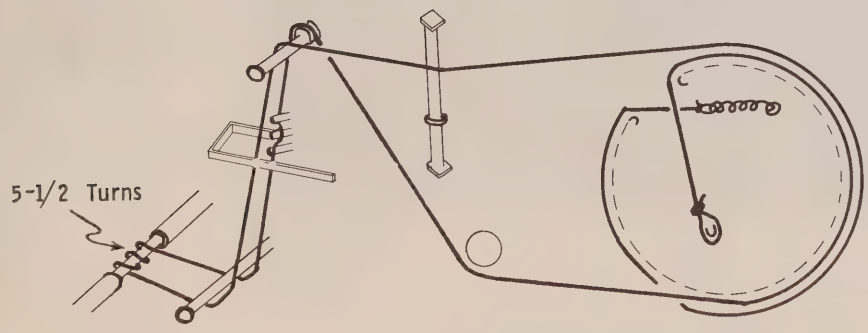
MOTOROLA
MODELS 10T28B, M, MC (Ch. HS-589)



MOTOROLA
MODELS 10T28B, M, MC (Ch. HS-589)

TRADE NAME	Motorola Models 10T28B, 10T28M, 10T28MC (Ch. HS-589)		
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	AC Operated FM-AM Receiver		
TUBES	Ten		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.44 Amp. @ 117 Volts AC (42 Watts)
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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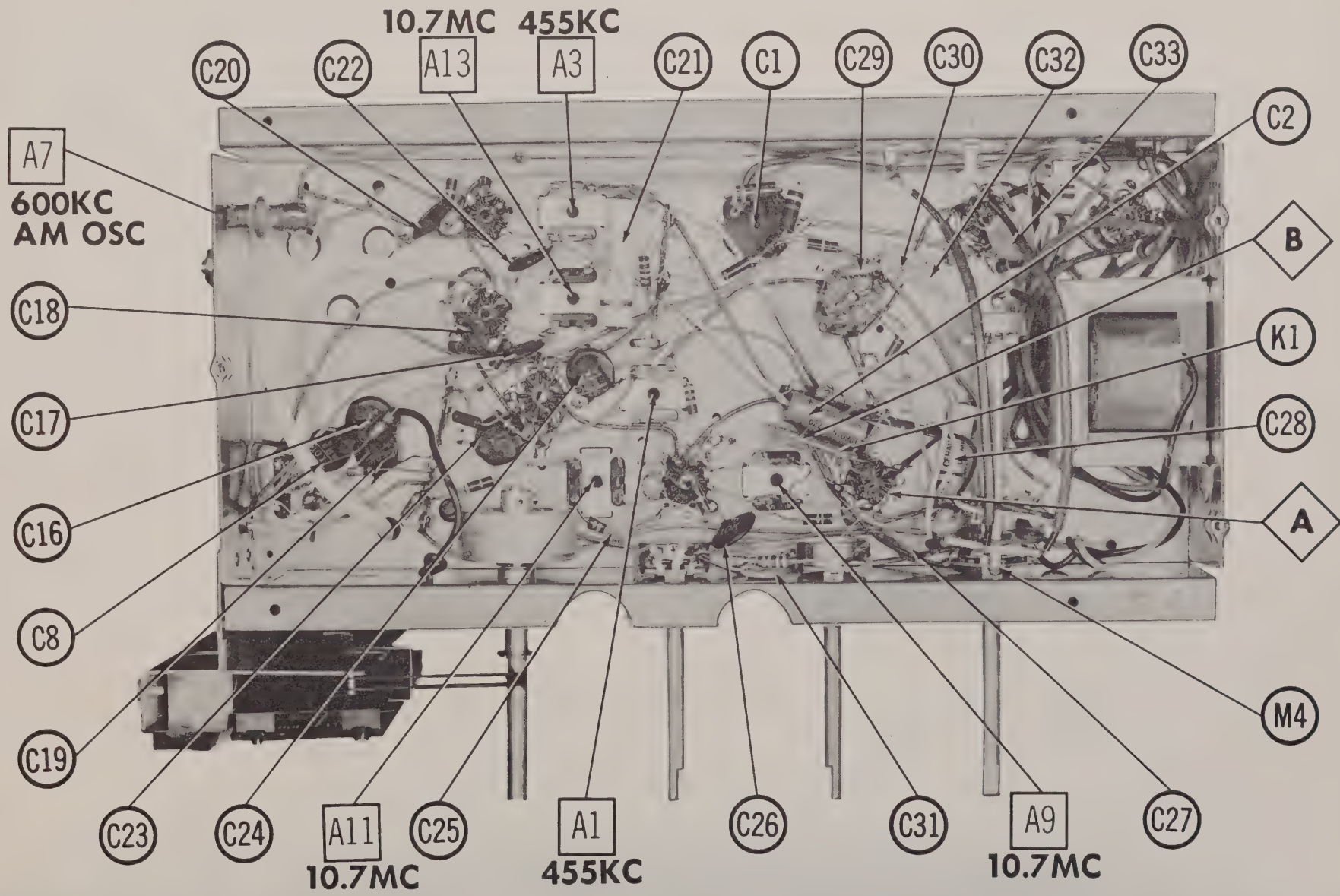
H430

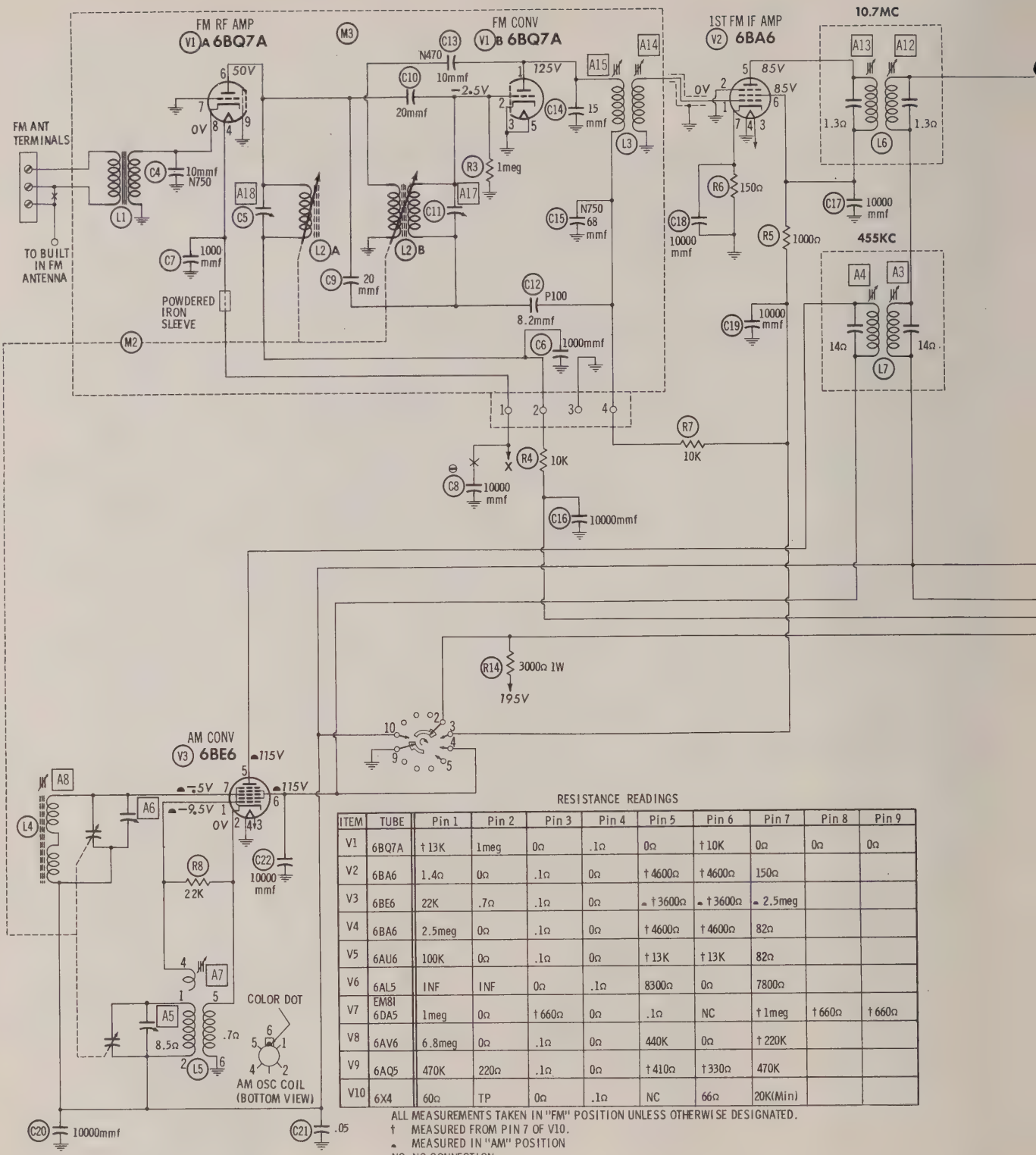
SET 402 FOLDER 11



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MOTOROLA
MODELS 10T28B (Ch. HS-589)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	†13K	1meg	0Ω	.1Ω	0Ω	†10K	0Ω	0Ω	0Ω
V2	6BA6	1.4Ω	0Ω	.1Ω	0Ω	†4600Ω	†4600Ω	150Ω		
V3	6BE6	22K	.7Ω	.1Ω	0Ω	▲†3600Ω	▲†3600Ω	▲2.5meg		
V4	6BA6	2.5meg	0Ω	.1Ω	0Ω	†4600Ω	†4600Ω	82Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	†13K	†13K	82Ω		
V6	6AL5	INF	INF	0Ω	.1Ω	8300Ω	0Ω	7800Ω		
V7	EM81 6DA5	1meg	0Ω	†660Ω	0Ω	.1Ω	NC	†1meg	†660Ω	†660Ω
V8	6AV6	6.8meg	0Ω	.1Ω	0Ω	440K	0Ω	†220K		
V9	6AQ5	470K	220Ω	.1Ω	0Ω	†410Ω	†330Ω	470K		
V10	6X4	60Ω	TP	0Ω	.1Ω	NC	66Ω	20K(Min)		

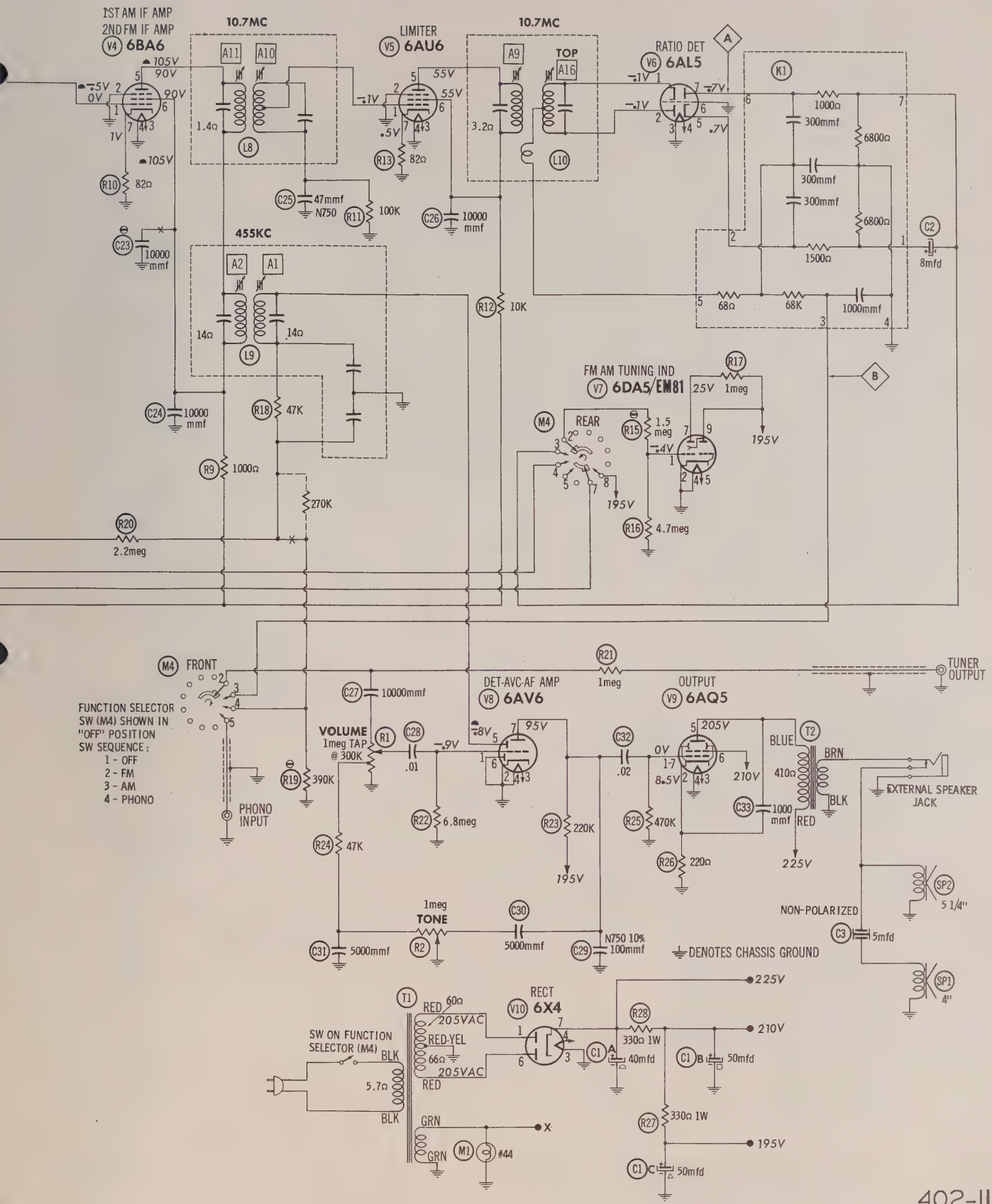
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 7 OF V10.
▲ MEASURED IN "AM" POSITION
NC NO CONNECTION.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958


1ST AM IF AMP
2ND FM IF AMP
V4 6BA6
10.7MC
A11
A10
1.4Ω
L8
LIMITER
V5 6AU6
10.7MC
A9
TOP
A16
3.2Ω
L10
RATIO DET
V6 6AL5
A
K1
1000Ω
300mmf
6800Ω
300mmf
300mmf
6800Ω
1500Ω
C2
8mfd
68Ω
68K
1000mmf
R10 82Ω
C23 10000 mmf
C25 47mmf N750
R11 100K
C26 10000 mmf
R13 82Ω
455KC
A2
A1
14Ω
.14Ω
L9
R12 10K
C24 10000 mmf
R18 47K
R9 1000Ω
270K
R20 2.2meg
FM AM TUNING IND
V7 6DA5/EM81
R17 1meg
25V
B
M4 REAR
R15 1.5 meg
195V
R16 4.7meg
M4 FRONT
FUNCTION SELECTOR SW (M4) SHOWN IN "OFF" POSITION
SW SEQUENCE:
1 - OFF
2 - FM
3 - AM
4 - PHONO
PHONO INPUT
R19 390K
C27 10000mmf
VOLUME
1meg TAP @ 300K
R1
C28 .01
R21 1meg
TUNER OUTPUT
DET-AVC-AF AMP
V8 6AV6
OUTPUT
V9 6AQ5
C32 .02
T2
BLUE
BRN
BLK
RED
410Ω
EXTERNAL SPEAKER JACK
C33 1000 mmf
R22 6.8meg
R23 220K
R25 470K
R26 220Ω
R24 47K
1meg
TONE
R2
C30 5000mmf
C31 5000mmf
C29 N750 10% 100mmf
DENOTES CHASSIS GROUND
NON-POLARIZED
C3 5mfd
SP2 5 1/4"
SP1 4"
T1
RED 60Ω
205VAC
RED-YEL
66Ω
205VAC
RED
BLK
5.7Ω
BLK
GRN
GRN
M1 #44
SW ON FUNCTION SELECTOR (M4)
RECT
V10 6X4
R28 330Ω 1W
C1 A 40mfd
C1 B 50mfd
R27 330Ω 1W
C1 C 50mfd
225V
210V
195V
402-11

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The tuning indicator (V7) may be used to replace the VTVM or scope in the alignment procedure except for step 6. If this method is used, adjust for maximum closing of the tuning indicator.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to AM antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune to 1400KC signal	"	A6	"
4.		"	600KC	"	Tune to 600KC signal	"	A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Direct	Across FM antenna terminals.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A9, A10, A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	Across FM ant. terminals.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A9, A10, A11, A12, A13, A14, A15	Disconnect stabilizing capacitor (C2). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A16	Reconnect capacitor (C2). Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

Perform steps 7 and 8 if FM tuning string has not been tampered with. Perform steps 9 and 10 if FM tuning string has been tampered with or replaced. The string should measure 3" from FM tuner unit opening to the collar.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Direct	Across FM antenna terminals.	108.1MC (Unmod)	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A17	Adjust for maximum deflection.
8.	"	"	96.0MC	"	Tune to 96MC signal	"	A18	"
9.	"	"	110.0MC	"	No tension on tuning string	"	A17	Adjust for maximum deflection.
10.	"	"	109.5MC	"	Tuning gang fully open	"		Place FM tuner string and collar on gang shaft. Turn collar clockwise until a maximum deflection is obtained. Fasten collar. Repeat steps 7 and 8.

FIG. 1

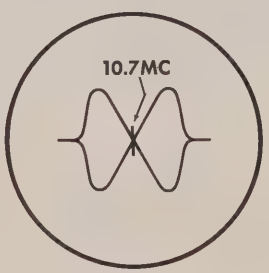


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp. -FM Conv.	6BQ7A	
V2	1st. FM IF Amp.	6BA6	
V3	AM Converter	6BE6	
V4	2nd. FM-1st. AM IF Amp.	6BA6	
V5	FM Limiter	6AU6	

ITEM No.	USE	TYPE	NOTES
V6	Ratio Detector	6AL5	
V7	Tuning Indicator	6DA5/EM81	
V8	Det. -AVC-AF Amp.	6AV6	
V9	Output	6AQ5	
V10	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	250	23B638439	AFH4-06-40	D0054	FP377.2		Q-017	TVL-3639.9
B	■50	250				TC55			
C	▲50	250							
C2	8	50	23A638536	PRS150V8	BBR8-150	TC32	TD-8-150	MT-1508	TVA-1405
C3	5	10VAC	23A632250	AC-PRS10V8	BBR10-25 †	TC22 †	TD-10-25 †	MT-0210 †	R2316 *
					BBR10-25 †	TC22 †	TD-10-25 †	MT-0210 †	

† Connect negative leads together.
*Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

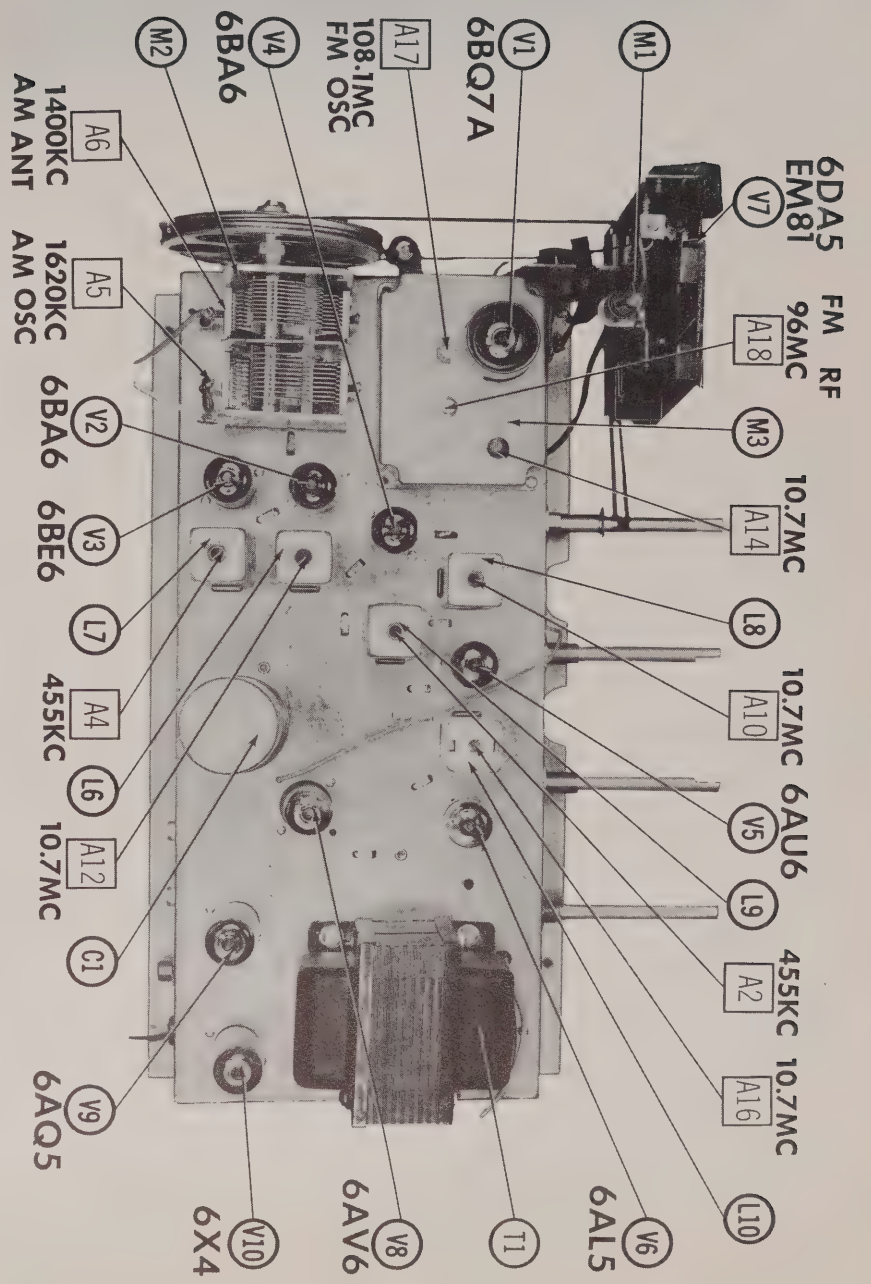
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	10		21K640021	N750-SI 10	TCN-10	CTA6Q1U	NT-541	5TCU-Q1	N750
C5			20K640023						
C6	1000		21K640022	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C7	1000		21K640022	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C8	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	①
C9	20		21K640024	SI 20	D6-200	LT6Q2	UC-542	5GA-Q2	
C10	20		21K640024	SI 20	D6-200	LT6Q2	UC-542	5GA-Q2	
C11			20K640025						
C12	8.2		21K640027						P100
C13	10		21K640026						N470
C14	15		21K640028	SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C15	68		21K640029	N750-SI 68	TCN-68	CTA6Q68U		5TCU-Q68	N750
C16	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C17	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C18	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C19	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C20	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C21	.05	400	8R121567	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C22	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C23	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	①
C24	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C25	47		21R115593	N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C26	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C27	10000		21R482726	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C28	.01	400	8R121002	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C29	100		21R410036	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C30	5000		21R122915	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C31	5000		21R122915	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C32	.02	400	8R121566	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C33	1000		21R124456	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	

① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	18A638308	BT-73	A47F4-1meg	Q13-137X	UT-438	Volume, Tap @ 300K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	18A638307	B-69	A47-1meg-S	Q11-137	U54	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R3	1meg		17K640032	
R4	10K		6R6054	
R5	1000Ω		6K127960	
R6	150Ω		6K124797	
R7	10K		6R6054	
R8	22K		6K119405	
R9	1000Ω		6K127960	
R10	82Ω		6K127516	
R11	100K		6K122313	
R12	10K		6K119932	
R13	82Ω		6K127516	
R14	3000Ω	5(WW)	17K733877	
R15	1.5meg		6R6460	Note 1
R16	4.7meg		6K121277	
R17	1meg		6K122324	
R18	47K		6K121687	
R19	390K		6R5646	Note 2
R20	2.2meg		6R3927	
R21	1meg		6K122324	
R22	6.8meg		6K122321	
R23	220K		6R6015	
R24	47K		6K119932	
R25	470K		6K119406	
R26	220Ω		6R6270	
R27	330Ω	1	6R6147	
R28	330Ω	1	6R6147	

Note 1. Some versions use 1.8meg in this application (Part #6R488215).
Note 2. Some versions use 220K in this application (Part #6K122322)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @.44A	400VCT @.069A	6.3V @3.15A	25C638360				PC8419 ①	24R12U	

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4800Ω	3-4Ω	25C638416-A	Z1107 ①	A-3019 ①	AU-601 ①	A-8092 ①	24S51 ①	S-3X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	50C639523 ①	4A1Z8	① Replace with Part #50K636329
SP2	5 1/4"	PM	3-4Ω	50C638487 ②	52A21	② Alternate Part #50K639557

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	25K640033					
L2A	FM RF Coil	24K640031					
B	FM Osc. Coil						
L3	1st. FM IF	25K640034					Includes cabinet back
L4	Loop Stick	24D638361					
L5	AM Osc. Coil	24B638340	14-1073	BC-393	69-OSC		
L6	2nd. FM IF	24C638646	16-3487	FM-254	1463		
L7	1st. AM IF	24C634507	16-6758	BC-352	12-C1	RF-1	
L8	3rd. FM IF	24K638647					
L9	2nd. AM IF	24K634508	16-6770	BC-355	12-C6		
L10	Ratio Det.	24C638488	17-3498	FM-255	1465		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Ratio Det. Net.	300mmf, 300mmf, 300mmf, 1000mmf, 1500Ω, 6800Ω, 68K, 6800Ω, 1000Ω, 68Ω	51B639144	

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Dial Lamp	65R10867	#44
M2	Tuning Cap.	19B638316	2 Gang (Ant. 28-352mmf, Osc. 24-140mmf)
M3	Tuner	77D638430	FM Tuner Assy. (UT-343)
M4	Switch	40C638524	Function, Rotary Wafer and SPST

CABINETS & CABINET PARTS

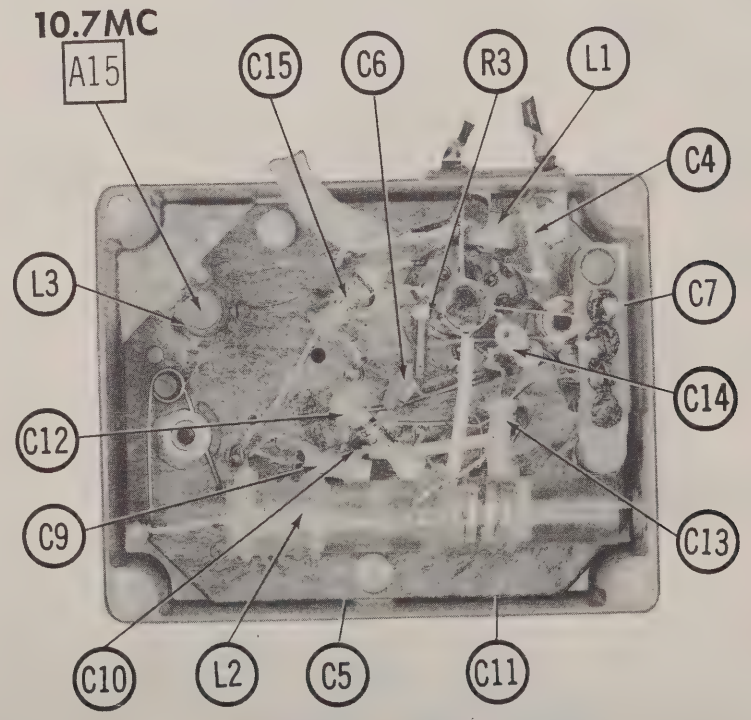
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K639631	Operation Selector
Knob	36B639630	Volume, Tone and Tuner
Cabinet	16K638282	Oak, Model 10T28B
Cabinet	16E638280	Mahogany, Model 10T28M
Cabinet	16K638281	Calif. Mahogany, Model 10T28MC

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



FM RF SUB CHASSIS

PHOTOFACT* Folder

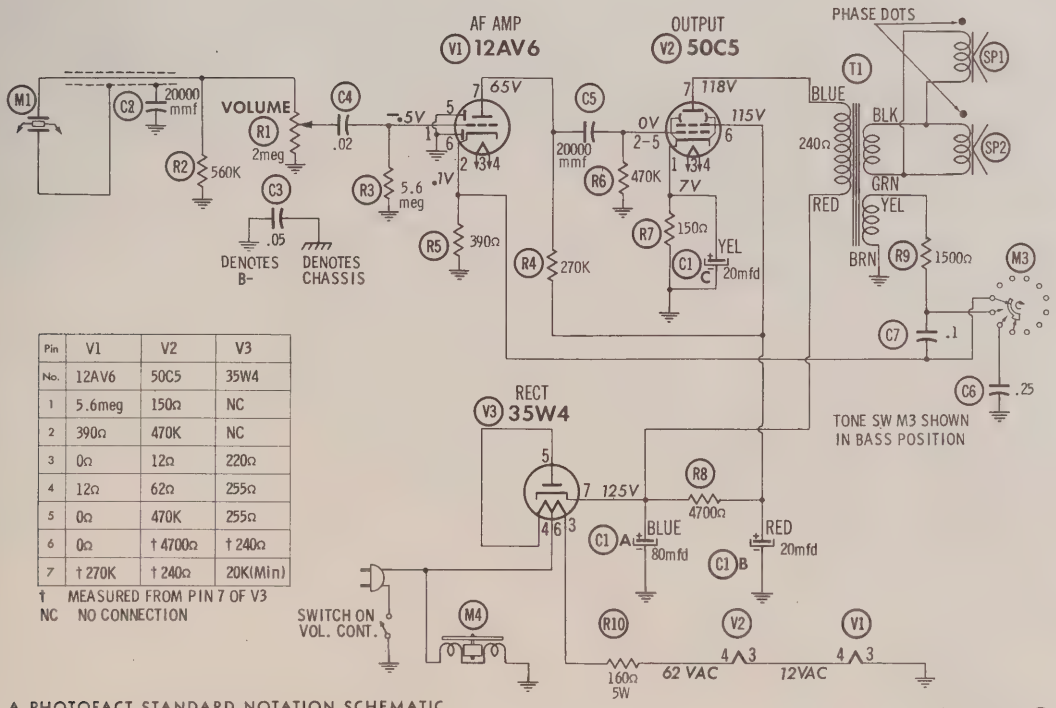
*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE MODEL 6237 (Ch. 567.36006)

SILVERTONE MODEL
6237 (Ch. 567.36006)

TRADE NAME	Silvertone Model 6237 (Ch. 567.36006)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (Three)	Types 12AV6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cyles RATING .26 Amp. @ 117 Volts AC (25 Watts Without Motor)



Pin No.	V1 12AV6	V2 50C5	V3 35W4
1	5.6meg	150Ω	NC
2	390Ω	470K	NC
3	0Ω	12Ω	220Ω
4	12Ω	62Ω	255Ω
5	0Ω	470K	255Ω
6	0Ω	† 4700Ω	† 240Ω
7	† 270K	† 240Ω	20K(Min)

† MEASURED FROM PIN 7 OF V3
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

402-12

SILVERTONE MODEL
6237 (Ch. 567.36006)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	770125	PRS150/25V	BBRQ53215C	WQ230	TDLT-7		R2318 *
B	20	150		8040/20					
C	20	25							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	20000		770092	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C3	.05	200	770122	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	.02	200	770016	P288N-02	DD-203	CUB2S2	ED-02	GEM-412	2TM-S2	
C5	20000		770092	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C6	.25	200	770119	P288N-25		CUB2P25		GEM-2025	2TM-P25	
C7	.1	200	770128	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2Meg	½	740070					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R2	560K		760039	
R3	5.6Meg		760054	
R4	270K		760014	
R5	390Ω		760030	
R6	470K		760037	
R7	150Ω		760023	
R8	4700Ω		760017	
R9	1500Ω		760003	
R10	160Ω	5	760311	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2300Ω	1.6Ω	700081						

SPEAKER

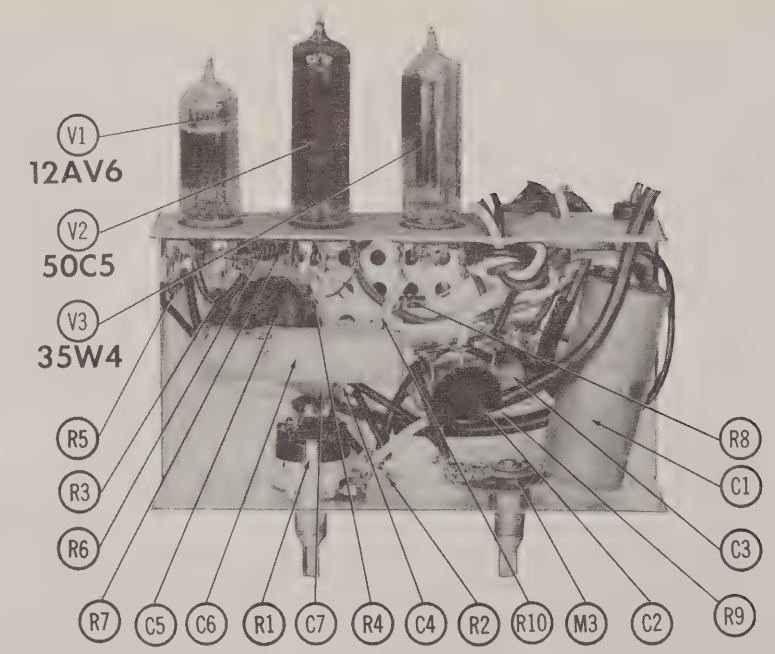
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	011857 ①	52A1	① Parallel and phase.
SP2	5 1/4"	PM	3-4Ω	011857 ①	52A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	720091	55-T or 81-TB	G-D	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	720055	† S-66 or †♦ S-66SD or ♦ S-66D	† W-75TPS or †♦ W-75DS or ♦ W-75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	740069	Tone (Rotary Wafer Type)
M4	Motor	011902	(Includes Motor & Drive)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	310263	On-Off-Volume, Tone
Cabinet	440293	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STEELMAN MODEL 4A23

STEELMAN
MODEL 4A23

TRADE NAME	Steelman Model 4A23
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amplifier, (2) 50C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .33 Amp. @ 117 Volts AC (35 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 1200A - PHOTOFACT SET 353 - FOLDER 16.

STEELMAN
MODEL 4A23

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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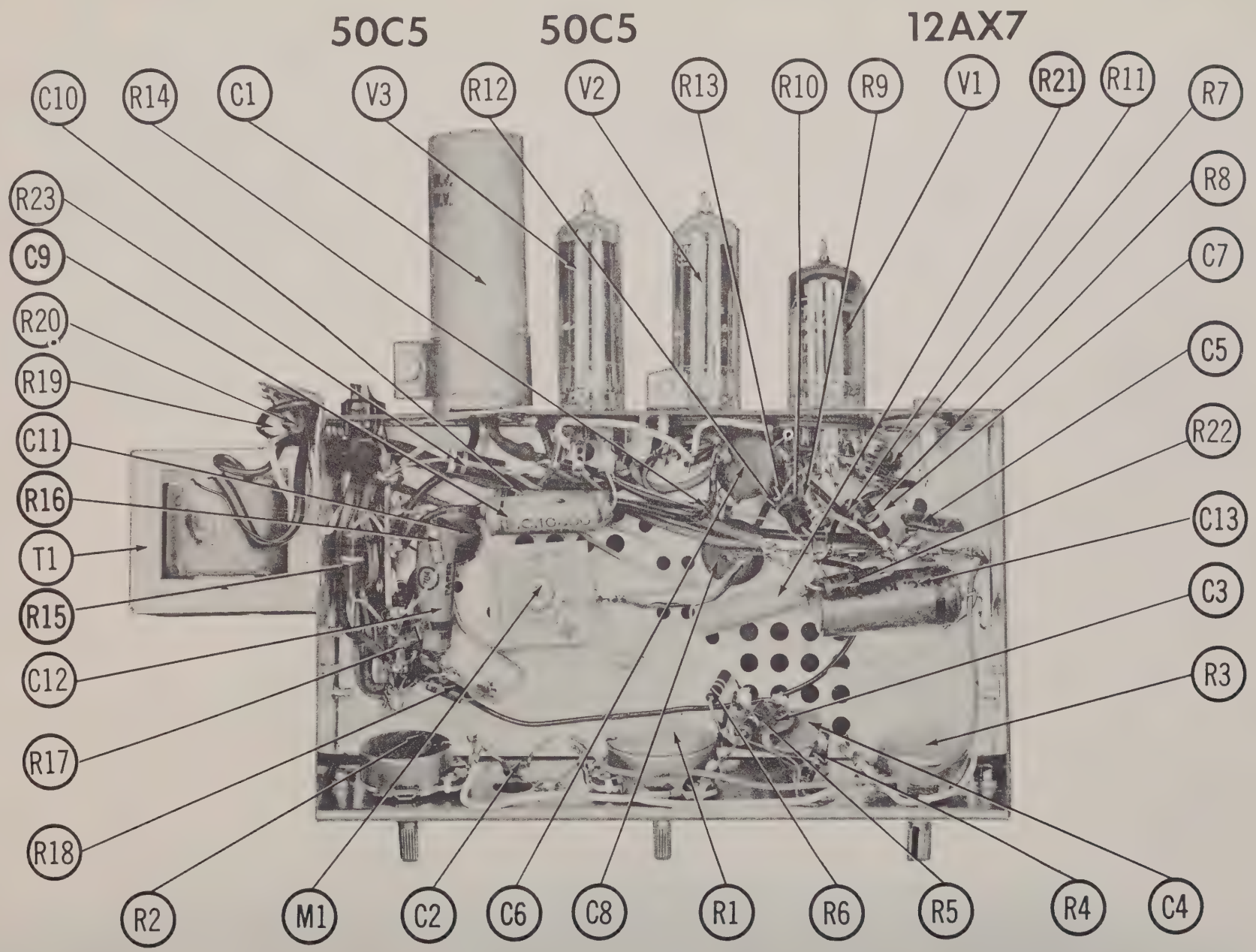


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier-Phase Inv.	12AX7	
V2	Output	50C5	
V3	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	582004	PRS150V8050	BBRD8515	TCD498	TDLD-12	FMD-303	TVA-2462
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	470			BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C3	3000			BPD-0033	DD-302	BYA10D3	ED-003	UC-5233	5GA-D3	
C4	3000			BPD-0033	DD-302	BYA10D3	ED-003	UC-5233	5GA-D3	
C5	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C9	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C10	.01	600		P688N-01	D6-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C11	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C12	.05	200		P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C13	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.25meg	½	368009					Loudness, Tap ⓐ 1meg & 2.5meg
R2A	250K	½	360265	B-50	A47-250K-S	Q11-130	U46	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	5meg	½	360330	B-88	A47-5meg-Z	Q13-141	U65	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	STEELMAN PART No.	NOTES
R4	100K			
R5	100K			
R6	100K			
R7	10meg			
R8	270K			
R9	47K			
R10	10meg			
R11	270K			
R12	470K			
R13	100Ω	1		
R14	470K			
R15	10K			
R16	32K			Note 1
R17	6.8meg			
R18	6.8meg			
R19	100K			
R20	4500Ω 5%			Note 2
R21	50Ω	5	510002	
R22	1000Ω	1		
R23	47Ω	1		Note 3

Note 1. Some versions may use 10K in this application.
Note 2. Some versions may use 4700Ω in this application.
Note 3. Some versions may use 39Ω in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3900Ω CT	3-4Ω CT	430222	Z1005	A-2901 ①		A-3850	24S61 ①	S-53X ①	① Use original channel mounting frame.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA STEELMAN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	408001	7A31	
SP2	6"x 2 1/4" Electrostatic			409001		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA STEELMAN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.075A	380011	1005A	RS100A	150	

PHONO CARTRIDGE

ITEM No.	STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	TO-400-7447/0V①	118-TS	N8-1 & N8-3	56	PT-1	① Used in Record Changer with narrow metal tone arm (approx. 5/8").
	TO-222/9655②	420-TS	N8-1 & N8-3			② Used in Record Changers with brown metal or plastic tone arm (approx. 1").
	TO-284-0V/9121 ③	64-TS	K-5 & K-78-J	56	PT-1	③ Used in Record Changers with metal tone arm.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	N5304N (78RPM) N5304L (LP)	†CRA-55 or ♦CRA-55D †CRA-55LP or ♦CRA-55LPD	†W64S or ♦ W64D †W64MGS or ♦W64MGD	† Jewel ♦ Diamond

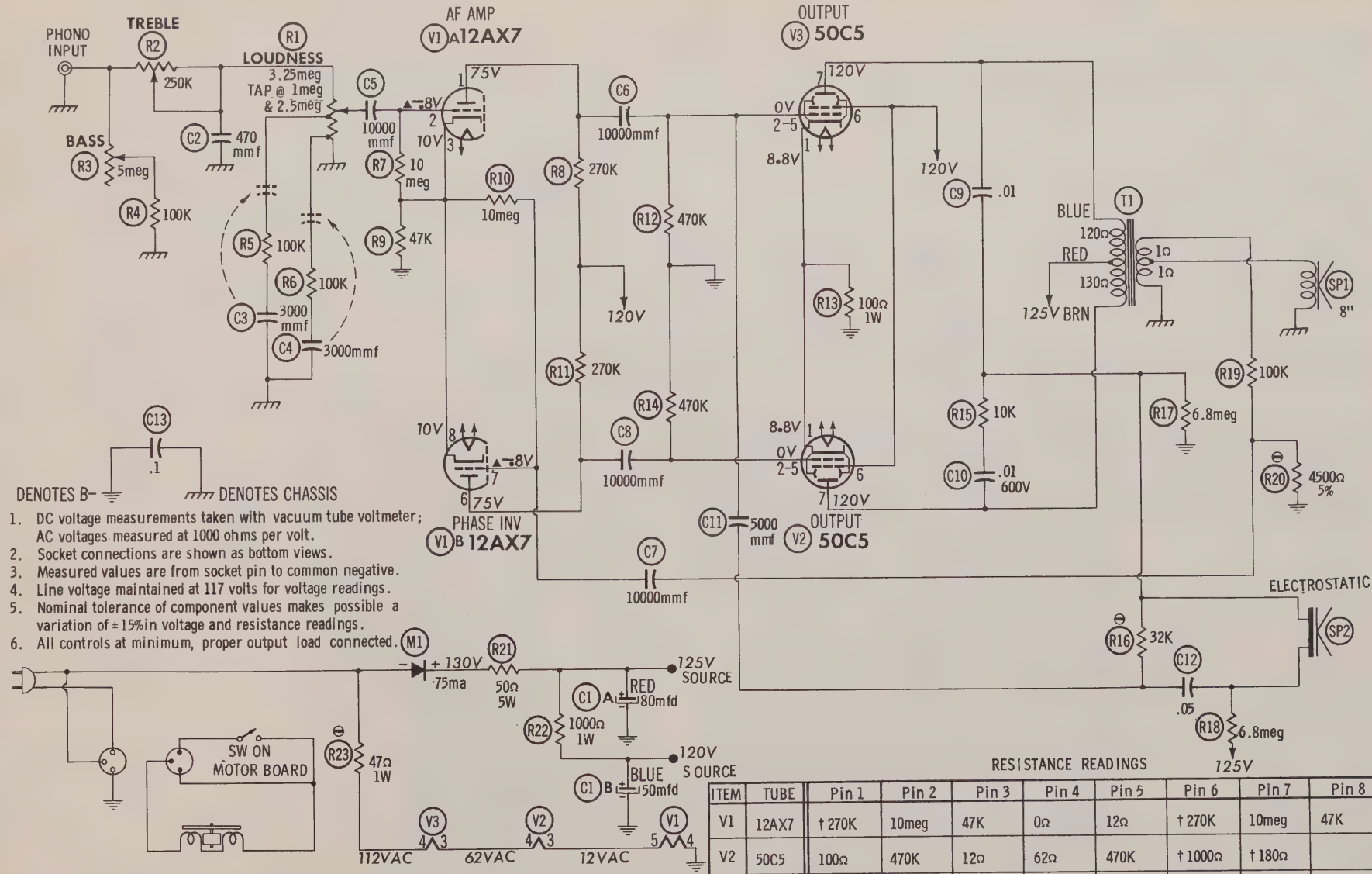
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Case	230500	Brown & tan
Case	230660	Green & white
Knob	270131	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 270K	10meg	47K	0Ω	12Ω	† 270K	10meg	47K	6Ω
V2	50C5	100Ω	470K	12Ω	62Ω	470K	† 1000Ω	† 180Ω		
V3	50C5	100Ω	470K	62Ω	112Ω	470K	† 1000Ω	† 170Ω		

† MEASURED FROM OUTPUT OF M1.
▲ MEASURED FROM PINS 3 & 8 OF V1.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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402-13

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*TRADE MARK

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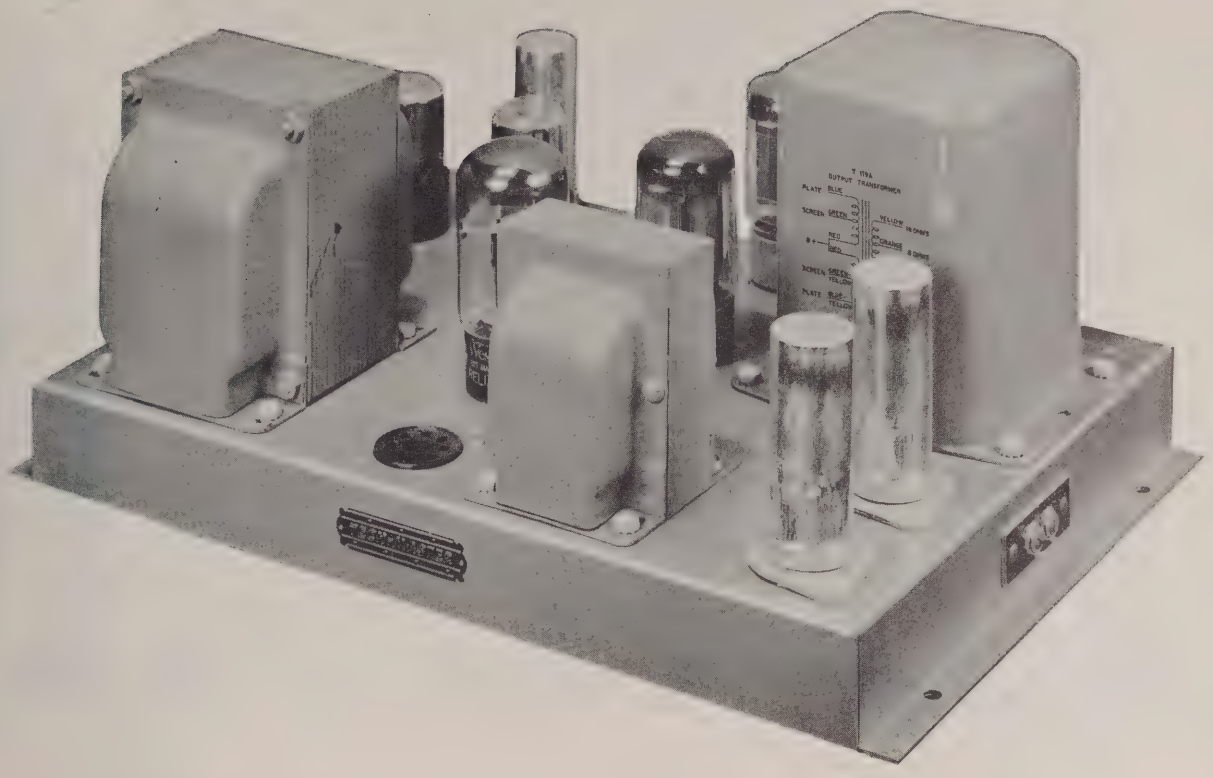
TECH-MASTER MODEL TM-15A

TECH-MASTER
MODEL TM-15A



TECH-MASTER
MODEL TM-15A

TRADE NAME	Tech-Master Model TM-15A
MANUFACTURER	Tech-Master Corp., 75 Front St., Brooklyn 1, N.Y.
TYPE SET	AC Operated Audio Amplifier
TUBES (Five)	Types 6SN7GTB AF Amp.-Phase Inv., 6SN7GTB Driver, (2) 5881 Output, 5V4GA Rectifier
POWER SUPPLY	105-120 Volts AC-50/60 Cycles RATING 1 Amp. @ 117 Volts AC

BALANCE ADJUSTMENT (R1)

Disconnect the jumper wire from terminal board on top of chassis. Connect a low range DC voltmeter across the terminals. Allow the amplifier to warm up. Adjust R1 for a zero reading on the voltmeter.

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SET 402 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp.-Phase Inv.	6SN7GTB	
V2	Driver	6SN7GTB	
V3	Output	5881	
V4	Output	5881	
V5	Rectifier	5V4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Tech-Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	20	500		AFH1-59	A0530	FP173	TMS-67	S-315	TVL-1943
C2	20	500		AFH1-59	A0530	FP173	TMS-67	S-315	TVL-1943
C3 A	■20	450		AFH2-51	B0410	FP234	TMD-50	D-215	TVL-2755
B	▲20	450							
C4	30	200		PRS250V30	BR3025	TC77	TD-30-250	MT-4530	TVA-1510

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Tech-Master PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	①
C6	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C7	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C8	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C9	82			1468-000082	D6-820	5W5Q82	ED-82		1FM-482	
C10	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C11	75			SI 75	D6-750	LT6Q75	GP-75	UC-5475	5GA-Q75	②
C12	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C13	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C14	.22	600		P688N-22		CUB6P22		GEM-6022	6TM-P22	

① Some versions may use .22mfd in this application.
② Some versions may use 82mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Tech-Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100Ω	2		WN-101	A43-100	WPK100	R100L	Balance (Wirewound)
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

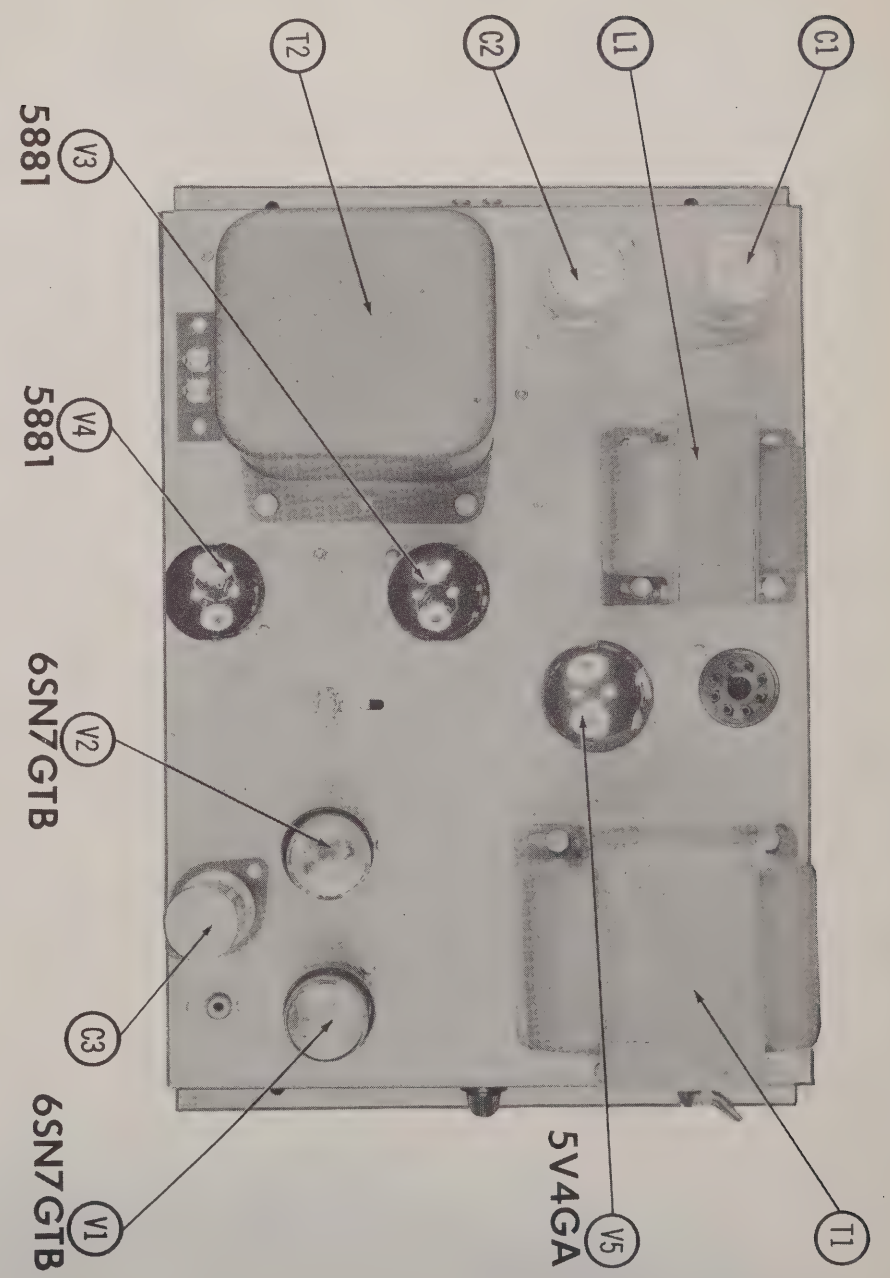
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Tech-Master PART No.	NOTES
R2	470K			
R3	47K			
R4	33K	2		
R5	470Ω			
R6	6800Ω			Note 1
R7	22K			
R8	22K	2		
R9	22K			
R10	470K			
R11	100K	2		Note 2
R12	100K	2		Note 3
R13	390Ω			
R14	470K			

ITEM No.	RATING OHMS	RATING WATT	Tech-Master PART No.	NOTES
R15	100K	2		Note 2
R16	100K			Note 3
R17	1000Ω			
R18	100K			
R19	100Ω 5%	1		
R20	22K	2		
R21	125Ω	4		Note 4
R22	270Ω	2		
R23	270Ω	2		
R24	1000Ω			
R25	100K			
R26	100Ω 5%	1		

Note 1. Some versions may use 10K in this application.
Note 2. Some versions may use 47K 2W in this application.
Note 3. Not used in some versions.
Note 4. Some versions may use 150Ω 4W in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Tech-Master PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @1A	800VCT @.140A	5V @ 2A	TP-15A	P9400			P-6143		R-72A
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @2.8A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Tech-Master PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5500Ω CT	16Ω Tap @ 8Ω, 4Ω	T-119A		A-3102		22S65	HSM-186	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	Tech-Master PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.140A	230Ω	13 Hy.	TCH-4	C5022	C-3180			20C54	C-14A

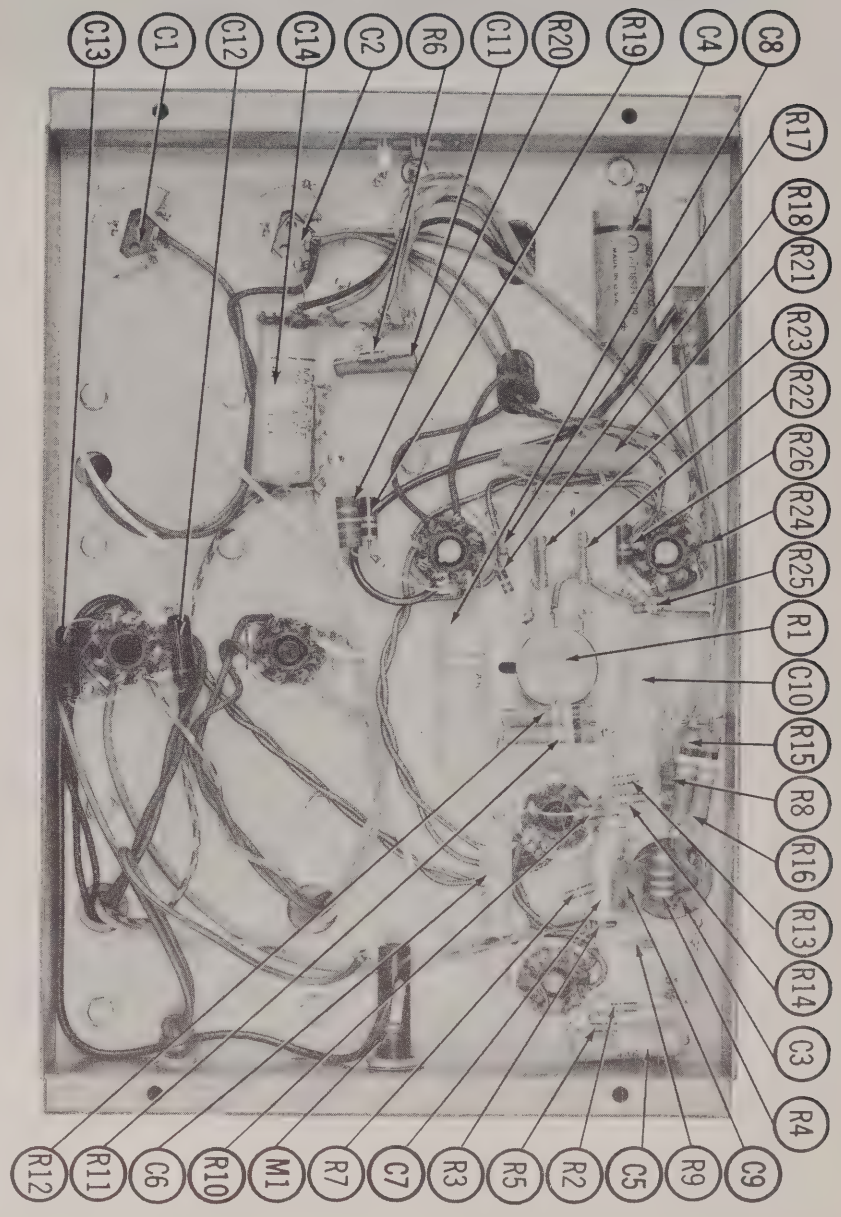
FUSES

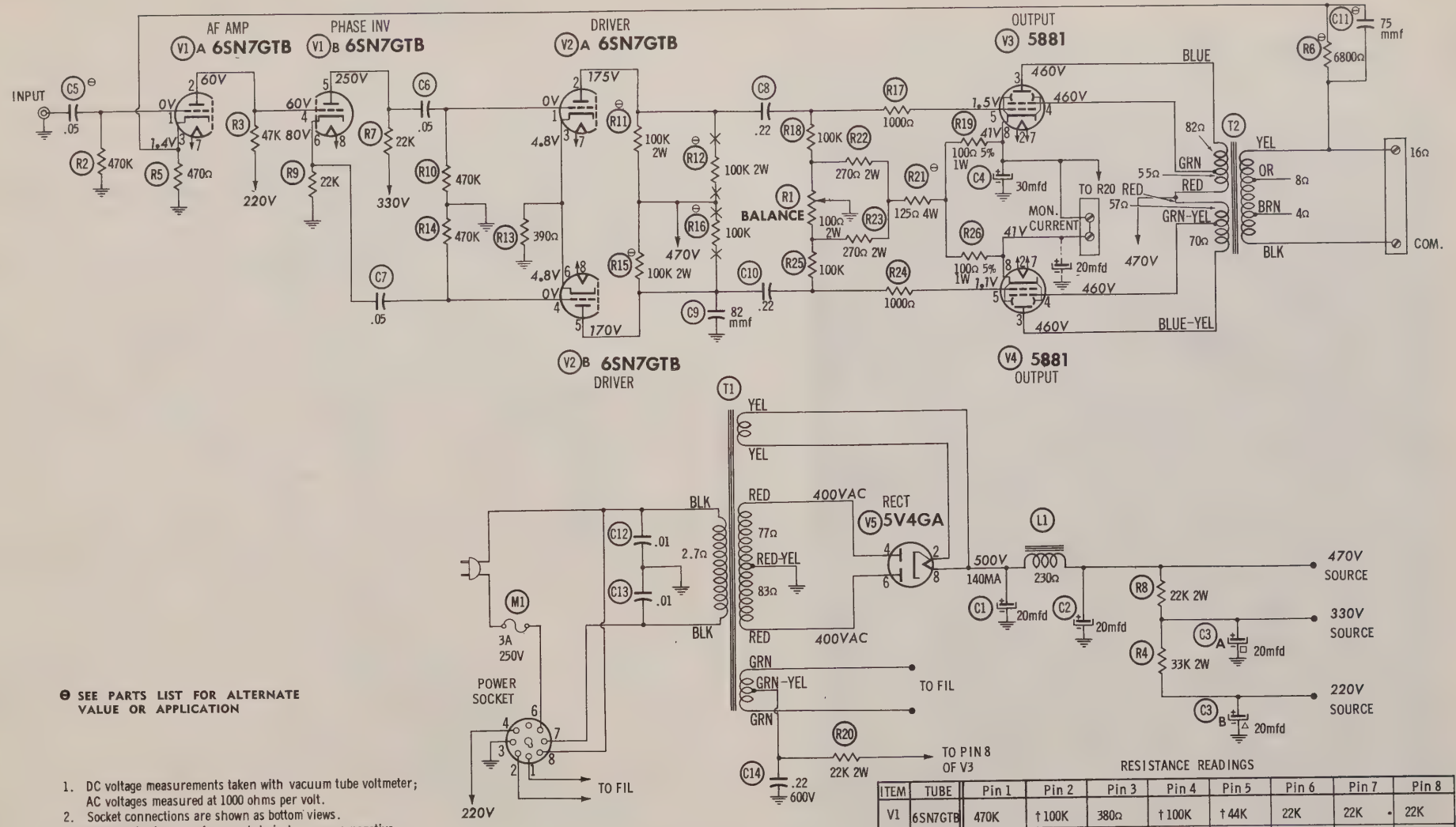
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Tech-Master PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V			312003. (3AG-3A 250V)	342001	AGC 3	HKP

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SN7GTB	470K	†100K	380Ω	†100K	†44K	22K	22K	22K
V2	6SN7GTB	470K	†50K	390Ω	470K	†50K	390Ω	22K	22K
V3	5881	NC	22K	†370Ω	†55Ω	100K	TP	22K	320Ω
V4	5881	NC	22K	†360Ω	†57Ω	100K	TP	22K	320Ω
V5	5V4GA	NC	20K(Min)	NC	77Ω	NC	83Ω	NC	20K(Min)

† MEASURED FROM PIN 8 OF V5
NC NO CONNECTION
TP TIE POINT

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ZENITH
MODELS S-14067, S-14086

ZENITH
MODELS S-14067, S-14086

ZENITH
MODELS S-14067, S-14086

GENERAL INFORMATION

Models S-14067 and S-14086 record changers play standard 16 2/3-, 33 1/3-, 45-and 78-rpm records.

These changers play and automatically change as many as ten 12", or 10" records. 10" and 12" records of same type cannot be intermixed.

A stack of 7" 33 1/3-rpm, or a stack of 7" 45-rpm records (with the 45-rpm spindle) can be played on these changers. After last record in stack has been played, changer automatically shuts off.

Connect these changers to a 117-volt, 60-cycle AC outlet only, unless otherwise specified.

Manufactured by:

Zenith Radio Corporation
6001 Dickens Avenue
Chicago 39, Illinois

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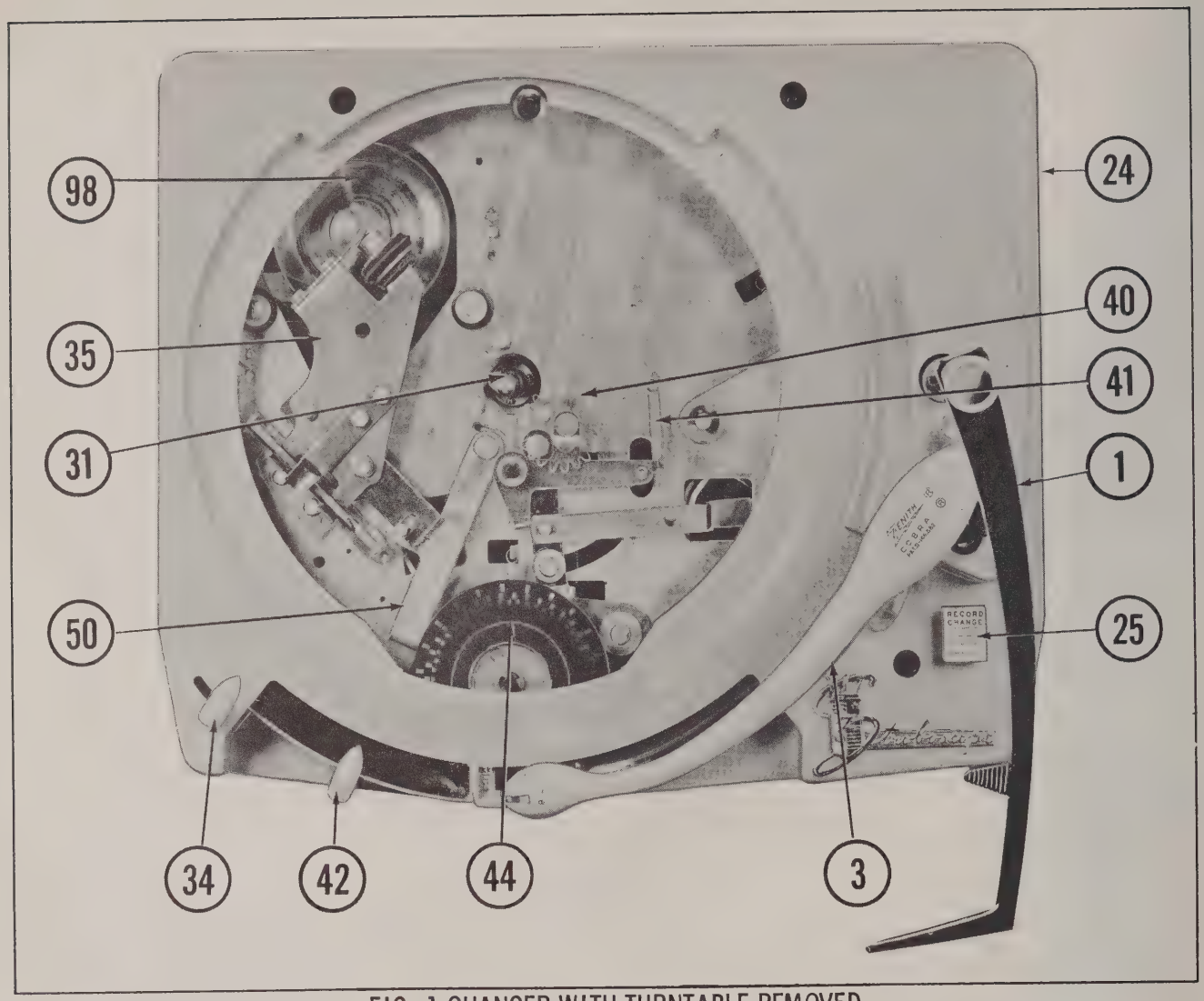


FIG. 1 CHANGER WITH TURNTABLE REMOVED

PREPARING FOR OPERATION

Shipping Bolts

Before operating changer, make sure it floats freely on mounting springs. During shipment, changer is secured to base pan with mounting bolts. To float changer, turn bolts down until flush with record changer base pan.

Leveling Record Changer

The record changer must be level. Use a torpedo or similar level on record changer base plate. Use adequate shims to level record changer pan or combination cabinet for a perfect level.

OPERATION

Loading

1. Pull straight up on record pressure arm until it clears spindle. Swing record pressure arm toward front of changer until pin in pressure arm shaft (1) drops into locating slot on record pressure arm housing.

2. Changer automatically plays ten 12" either standard or long play, ten 10" either standard or long play, or ten 7" long play or fine groove records.

Note: Standard, fine groove and long play records cannot be played in same stack of records. Speed change lever (50) must be reset for each type of record.

3. Place records on spindle and lower them to offset shelf. Hold records level and replace record pressure arm over spindle.

To Play Standard 78-rpm Records

1. Motor speed control (42) must be set to "78" position.

2. Move setup lever (55) to 7", 10" or 12" position depending on size of records.

3. Push On-Off switch to On position. Depress record change button (25). Changer will now play entire stack of records automatically and shut off after last record has been played.

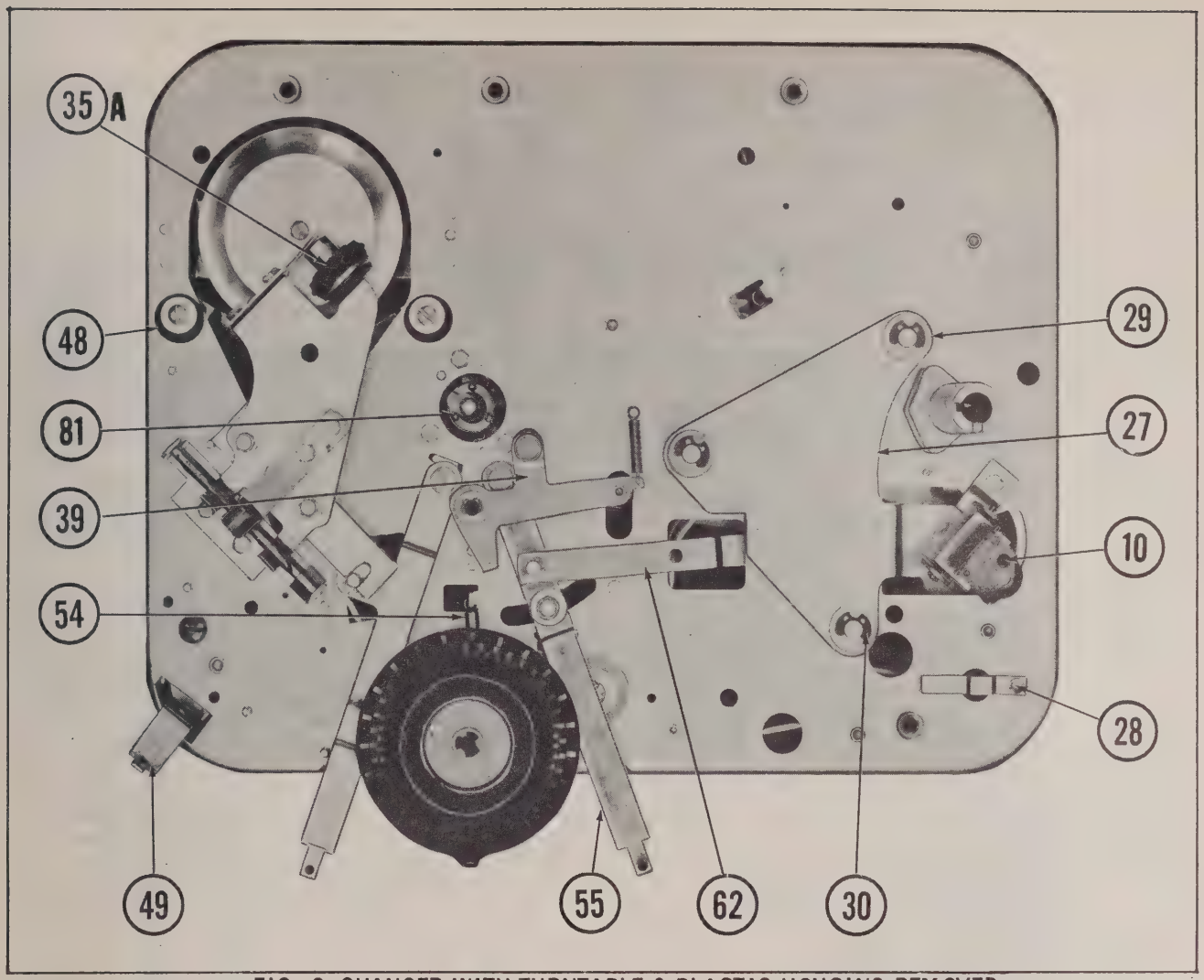


FIG. 2 CHANGER WITH TURNTABLE & PLASTIC HOUSING REMOVED

To Play 33 1/3-rpm Records

1. Move speed control lever (50) to "33" position.

2. Move setup lever (55) to 7", 10" or 12" position, depending on size of records.

3. Push On-Off switch to On position. Depress record change button (25).

To Play 45-rpm Records

1. Move speed control lever (50) to "45" position.

2. Move setup lever (55) to 7" position.

Note: 45-rpm spindle must be used when playing 45-rpm records.

3. Push On-Off switch to On position. Depress record change button (25).

Rejecting a Record

A record may be rejected at any time by depressing record change button (25).

Unloading

Lift record pressure arm (1) and swing toward front until pin in shaft drops into locating groove on record pressure arm shaft housing. Lift stack of records straight up and off spindle.

Manual Operation

To play single records or home recordings, lift record pressure arm and turn toward front of changer. Place record on spindle and lower to spindle shelf. Gently push record toward record pressure arm shaft and lower to turntable. Move speed change lever (50) to proper speed for record being played and move setup lever (55) to "Manual" position. Pick up tone arm and-gently place needle on lead-in groove of record.

CHANGE CYCLE

Drive wheel assembly (98) is belt-driven and drives idler wheel (35A). Idler wheel (35A) contacts underside of turntable and is driven in this manner. Turntable speed is determined by position of idler wheel (35A) on drive wheel (98). When idler wheel is moved to center of drive wheel by speed change lever (50), idler wheel rotates slower than when it is moved

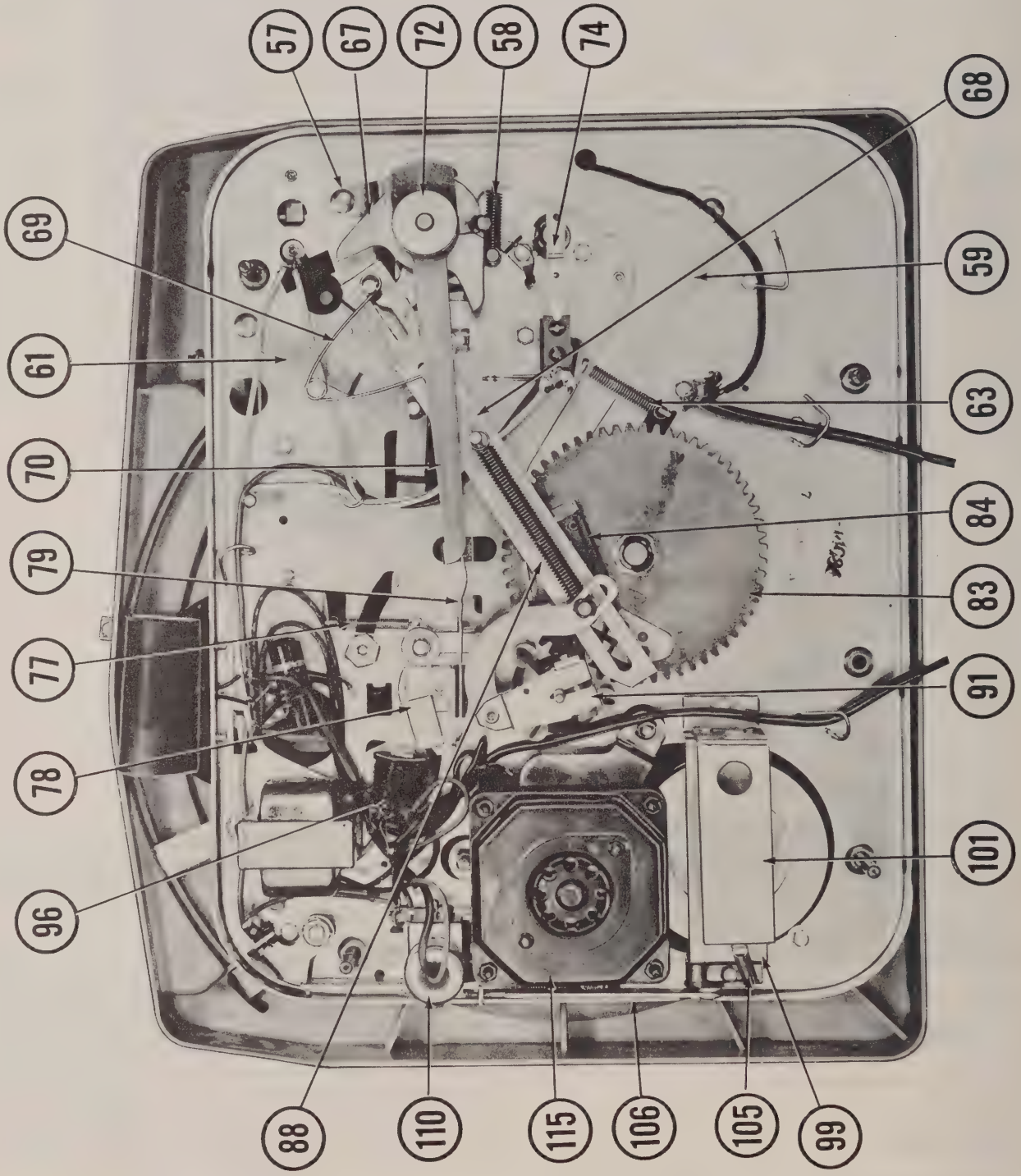


FIG. 3 BOTTOM VIEW OF CHANGER

CHANGE CYCLE (Con't)

to outer edge of drive wheel. Turntable can be adjusted for any speed from 10 to 85 rpm in this manner. Minor adjustments for proper tonal pitch can be made by moving speed change lever (50) back and forth to compensate for turntable speed, which may vary due to line voltage changes.

When record change button (25) is depressed, it energizes solenoid (96) which attracts trip pawl assembly (78). This also occurs when forward movement of tone arm causes friction lever and weight assembly (70) to contact silver-plated contact on trip switch assembly (79). When gear segment (85) is released, gear pawl spring (84) causes gear segment (85) to engage rotating pinion gear under turntable, causing clutch gear assembly (83) to rotate.

As clutch gear assembly (83) rotates, tone arm lift lever (59) moves off pin on clutch gear (83) and is pulled in by lift lever tension spring (63). This causes hooked end of lift lever (59) to engage tone arm shaft (21), raising tone arm from record. At same time, finger (A) of lift lever (59) moves away from brake lever (57), allowing it to engage tone arm lever and bushing assembly (67). This keeps tone arm from moving erratically during change cycle. At the same time, tone arm link and stud assembly (68) slides outward, pin of actuating lever (60) moves against finger of tone arm lever (67), moving tone arm out to clear records.

Ejector lever and link assembly (91), being actuated by clutch gear assembly (83), rotates spindle shaft and ejector cam enough to push a record off spindle shelf, thus dropping record to turntable.

As clutch gear assembly continues to rotate, tone arm link and stud assembly (68), due to spring (63), pulls actuating lever and pin assembly (60) inward. This causes pin of assembly (60) to contact other finger of tone arm lever (67), thus pivoting lever (67) and, in turn, tone arm inward. Amount of inward travel of tone arm is determined by engagement of actuating lever (60) with one of three steps on discriminator lever (61). This positions tone arm for 7", 10" or 12" setdown.

As clutch gear assembly (83) continues to rotate, spindle assembly is returned to its original position and pin on clutch gear (83) engages lift lever (59), swinging it so it lowers tone arm to record. Simultaneously, finger (A) on lift lever pushes against brake lever (57) and releases tone arm. Gear segment (85) engages trip pawl (78), pushing it back to prevent engagement with turntable pinion. Open section of clutch gear (83) now faces turntable pinion, completing change cycle.

As tone arm moves across record, friction lever and weight assembly (70) is carried with it. As tone arm nears end of record, friction lever is pushed away from tripping point by oscillating action of oscillating gear and lever assembly (39). Oscillating action of oscillating lever assembly (39) is produced by eccentric motion of oscillating gear driven by pinion gear on lower portion of turntable. This repeated action of oscillating lever keeps friction lever and weight assembly (70) from contacting silver contact on trip switch assembly (79) as tone arm moves slowly toward eccentric cycling groove of record. However, when tone arm enters cycling groove, friction lever and weight assembly (70) is moved fast enough for friction lever to engage silver contact on trip switch assembly (79), grounding it and making a complete circuit. This actuates solenoid (96) and starts a new change cycle.

Automatic Shutoff Mechanism

In addition to normal electromagnet (96), these changers have an electromagnet (109). Electromagnet (96) is used as a trigger to release pawl and link assembly (106), which moves On-Off lever to Off position. Also, there is a single-pole, double-throw switch (74) activated by pressure arm and shaft assembly (1). When pressure arm (1) is in Up position, trip switch (79) and reject switch (28) perform their normal function of energizing electromagnet (96) and cause changer to cycle, as described in change cycle.

During normal operation, place a stack of records on spindle, put pressure arm (1) down on records, move On-Off switch to On position, adjust speed shift lever and position size selector to size records to be played. Changer automatically plays all records. When last record has been dropped to turntable, pressure arm (1) drops and pushes center contact of trip switch assembly (74) from upper to lower contact. Record on turntable continues to play through, and when tone arm travels to center of record, trip switch (79) is closed, electromagnet (109) is energized and causes latch lever (111) to be pulled towards electromagnet (109). Immediately, pawl and link assembly (106) moves to left, moving On-Off lever (49) to Off position, stopping changer. At same time, pawl and link assembly (106) moves to left, and finger on its far right end releases pressure on pivot tension spring (105). This allows pivot bracket (101) to drop, releasing pressure normally between idler wheel and drive wheel to prevent possible driving surface collapse while changer is not operating.

To operate changer with a new stack of records, just lift pressure arm (1), place new stack of records on spindle (31), lower pressure arm (1) to top of records and move On-Off switch to On position. Unit can now play entire stack of records and shut off after last record. A rubber bumper (103) cushions and silences clattering and clanging of pawl and link assembly (106).

THEORY OF COBRA CARTRIDGE

The new Cobra cartridge is constructed differently from previous red, red/green and green Cobra cartridges. For an all-purpose replacement cartridge of this new type with a 2 mil. diameter stylus, specify yellow Cobra cartridge Part No. 142-72. For a Cobra cartridge specially designed for LP type 45, 33-1/3- and 16-2/3-rpm records, specify blue 1 mil. cartridge Part No. 142-71.

This new Cobra cartridge is a ceramic type. Internally, it consists of two strips of ceramic material soft soldered on either side of a brass strip in a sandwich-like unit. This construction adds individual voltages of each ceramic unit, thus doubling the electrical output. One end of this ceramic sandwich is inserted in a rubber cap at top of cartridge. For this element, it is a primary mounting point. A rubber cap fits over bottom of cartridge and needle, and bridle portion fastened to lower rubber cap. As needle follows lateral undulations of record grooves, it bends ceramic sandwich laterally, disrupting its crystal structure. This disruption of crystalline structure creates electrical energy by the piezoelectric effect.

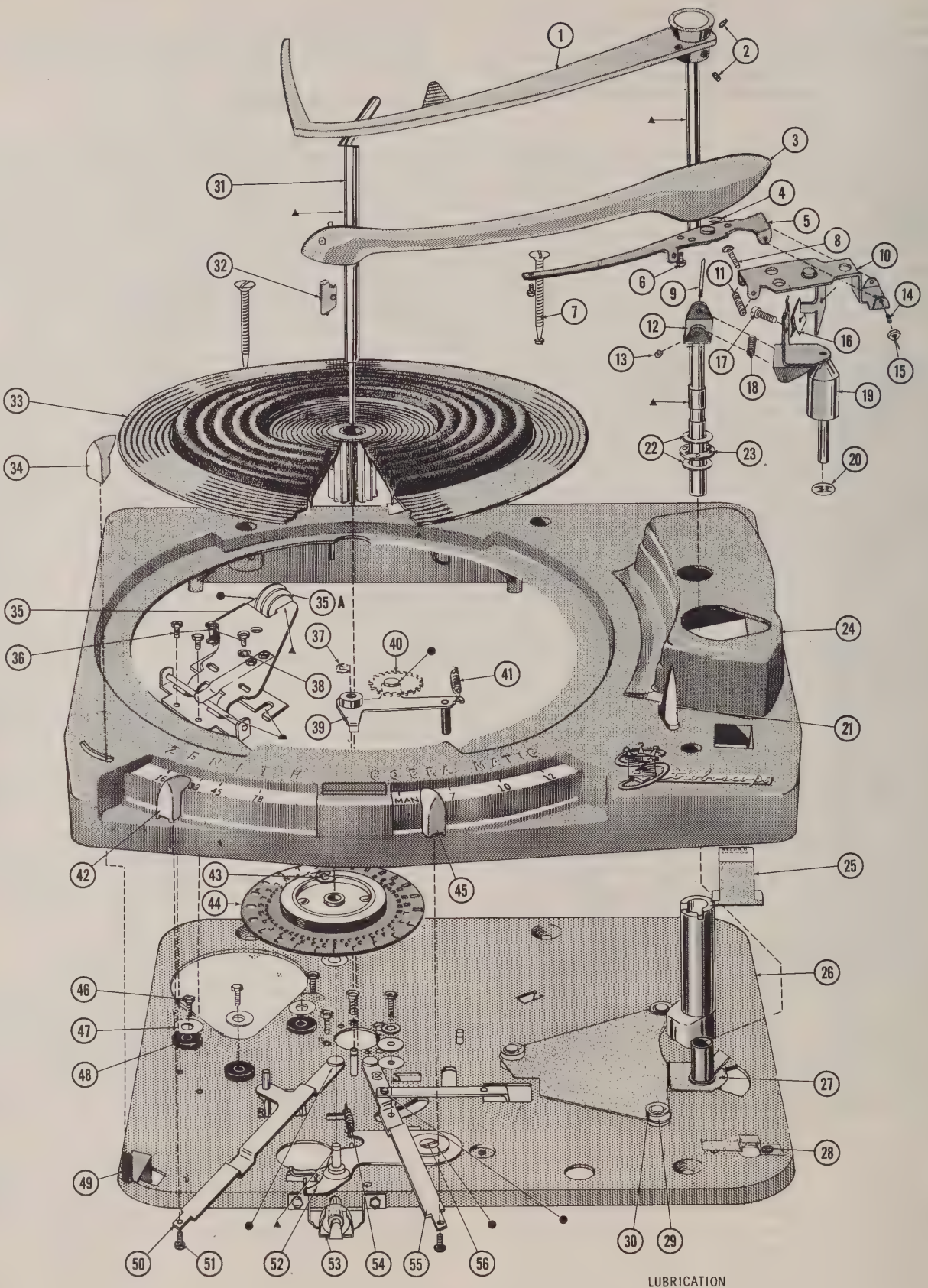


FIG. 4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

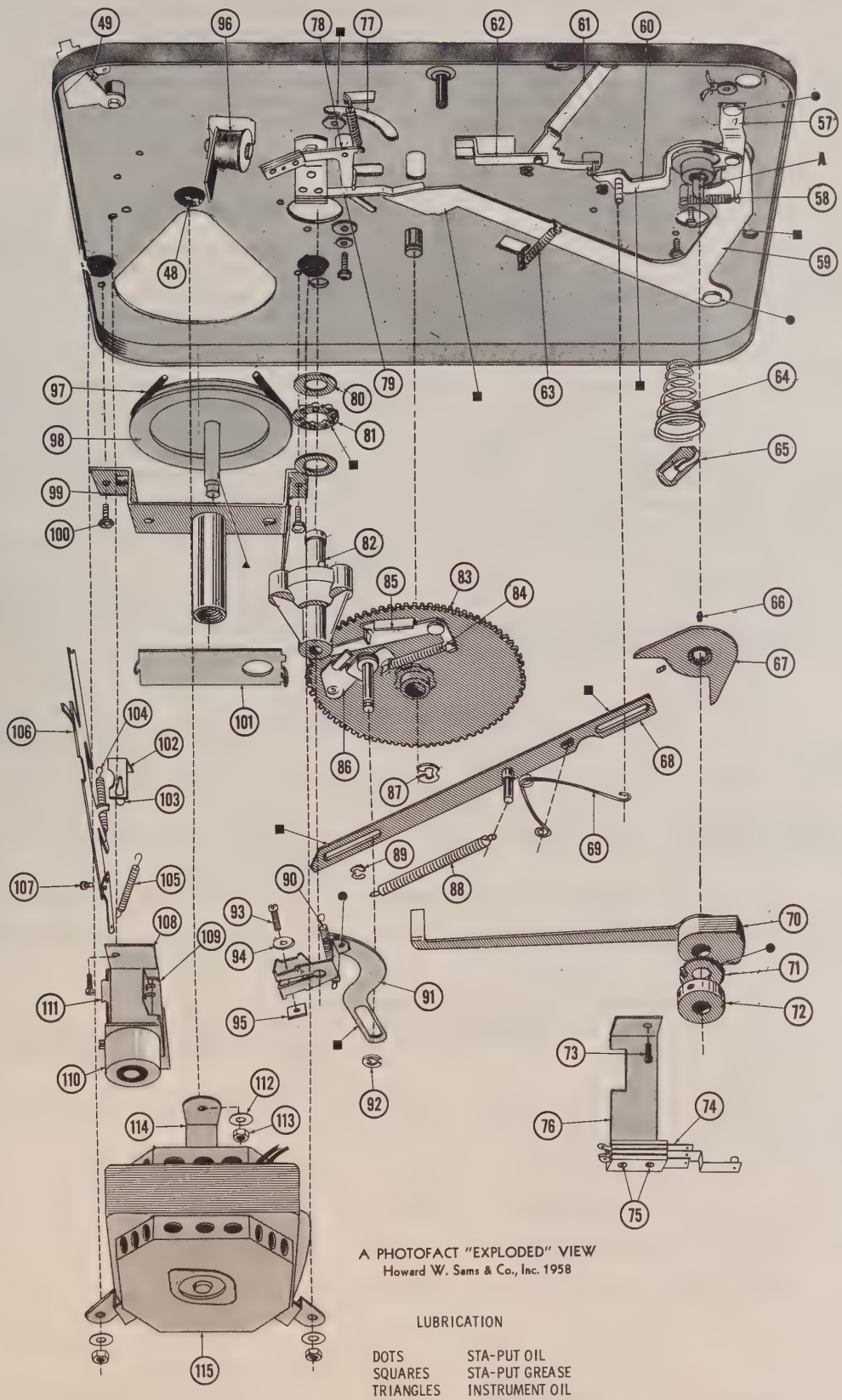


FIG. 4B EXPLODED VIEW OF PARTS BELOW BASEPLATE

THEORY OF COBRA CARTRIDGE (Con't)

Voltage created in ceramic sandwich is then taken and fed back to receiver amplifier through shielded lead in tone arm.

These ceramic-type elements are better than earlier Rochelle salt crystals. Their output is not affected by normal temperature changes; even temperatures below freezing or up to 190°F. do not affect them.

ADJUSTMENTS

Tone Arm Height Adjustment

Tone arm should be adjusted so it clears a full stack of 12 unwarped records on turntable and at same time, clears underside of a record resting on spindle shelf. This is adjusted by regulating height adjustment screw (17).

Setdown Adjustment

When adjusting tone arm for proper setdown on edge of record, move setup change lever (55) to 7" position, place a 7" record on turntable, turn changer through cycle by manually rotating turntable. Watch where needle point of Cobra cartridge lands on record and adjust tone arm setdown adjustment screw (8) for proper landing position.

Speed Indicator Adjustment

The record changer speed may not conform to speed stop on escutcheon. Proper adjustment can be made in the following manner. Place a stroboscopic disc on turntable and adjust speed change lever (50) until turntable is turning at exactly 78 rpm. Stop changer by pulling AC plug, remove turntable, loosen two adjusting screws (36) and move speed change lever (50) so point on control knob indexes exactly at 78 mark on escutcheon. Retighten adjusting screws (36) and replace turntable. Turntable should now rotate at exactly 78-rpm; however, recheck with stroboscopic disc.

Trip Contact Adjustment

For proper automatic rejecting, silver contact on trip switch assembly (79) should be in proper relation to silver contact on friction lever (70). Adjustment should be made with record changer resting on the side nearest idler wheel and trip assembly. Turntable should be rotated sufficiently to move oscillating lever (39) and stud to its maximum upward travel. Distance between silver contact on friction lever (70) and silver contact on trip switch (79) should be 1/16". If distance is greater or less than 1/16", support for silver contact on trip switch assembly (79) should be bent until a 1/16" gap is attained.

Slab Head Screws

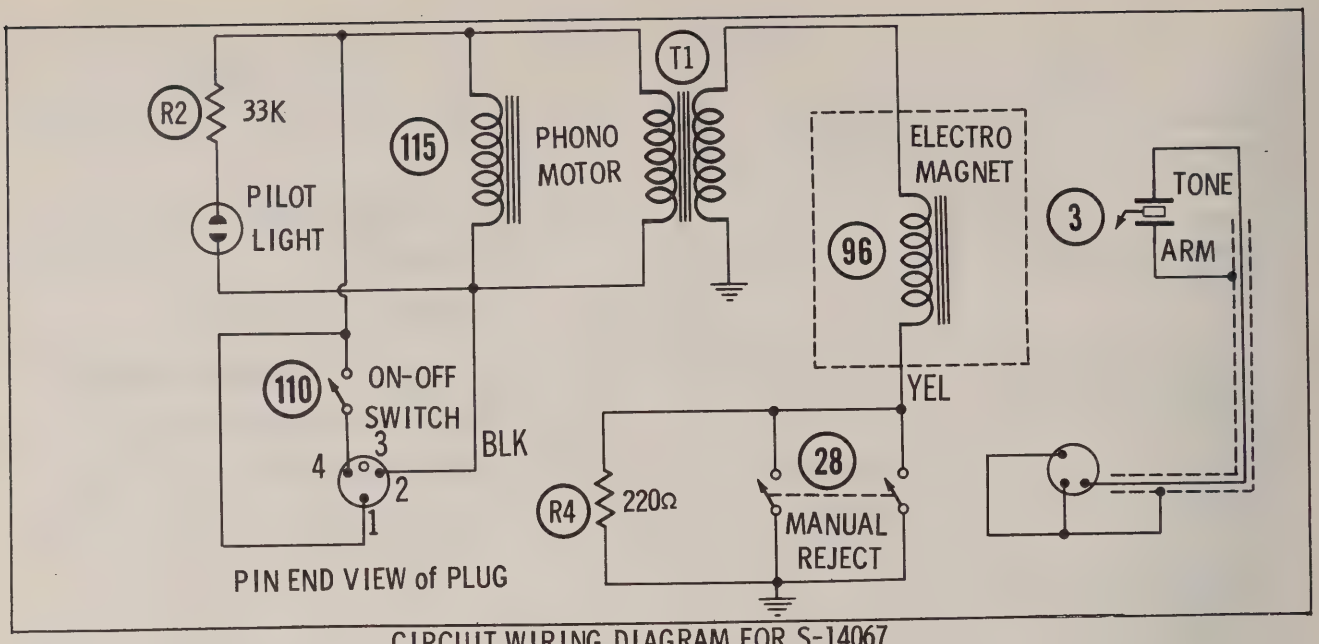
To dismantle many components of this changer, a slab head set screw wrench is required. This wrench is available (Part No. 68-8).

TROUBLE CHART

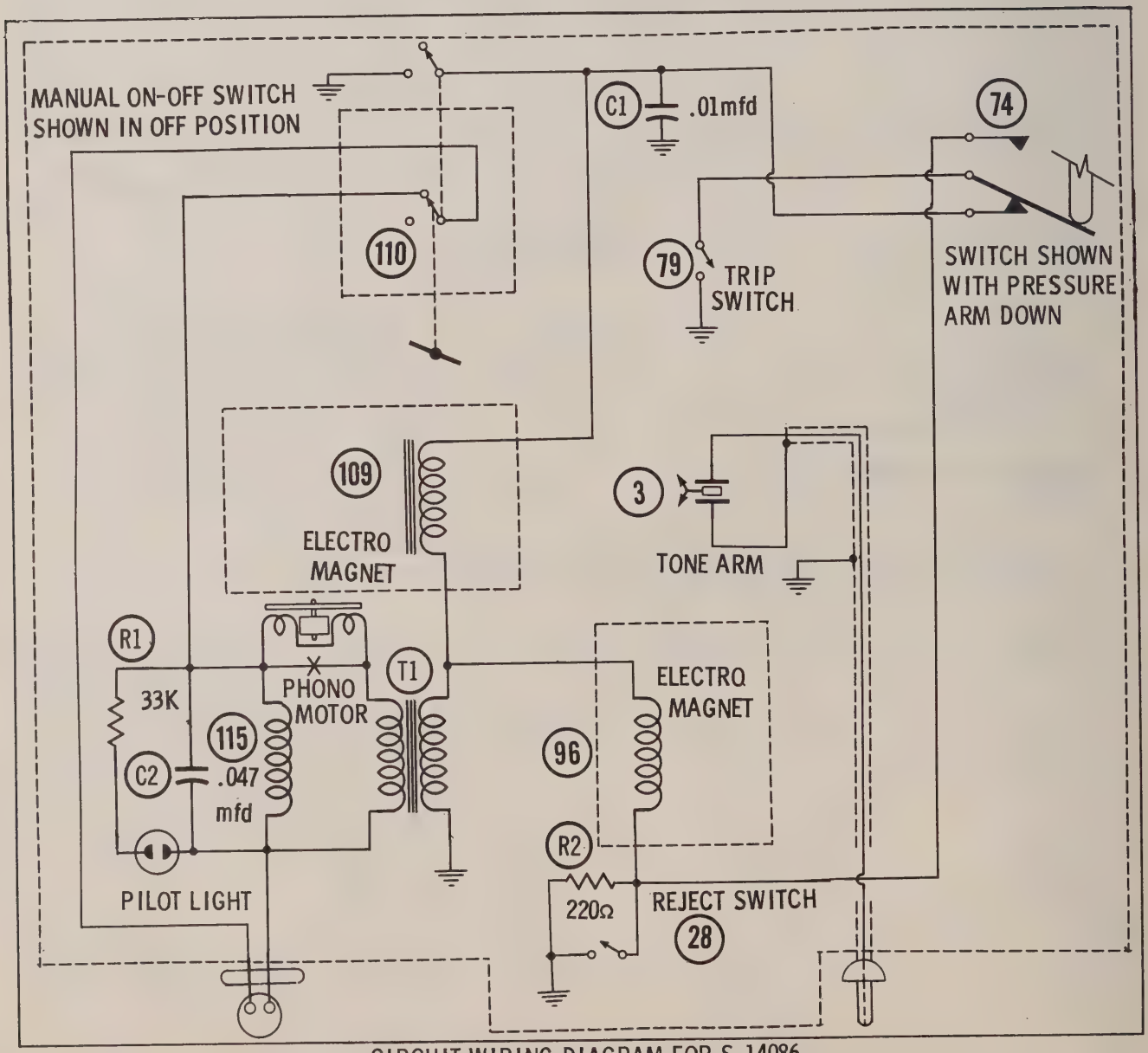
SYMPTOM	CAUSE	REMEDY
Needle does not properly track across record.	1. Dirty needle.	1. Clean foreign material from around needle.
	2. Tip of needle bent or broken.	2. Replace needle cartridge.
	3. Hinge bearing binds.	3. Check lateral movement of tone arm. It must move freely.
	4. Tone arm glides across record grooves while playing an LP record.	4. Vibration caused by unsteady mounting, floor vibration or a heavy vehicle passing by.
Mechanism starts slowly and motor gets hot.	1. Low line voltage.	1. Check line voltage for proper voltage.
	2. No lubrication.	2. Clean and lubricate.
	3. Motor windings damaged.	3. Replace motor.
Motor fails to run.	1. Open windings.	1. Replace motor.
	2. Damaged or frozen bearings.	2. Replace bearings.
	3. Lower rear support bracket (114) bent.	3. Remove and straighten bracket and re-center armature.
Tone arm falls off record.	1. Out of adjustment.	1. Readjust tone arm setdown.
	2. Pivot bracket (91) binding.	2. Make sure pivot bracket is free of dirt and not bent.
	3. Changer not level.	3. Level changer.

TROUBLE CHART (Con't)

SYMPTOM	CAUSE	REMEDY
Squeaks or noises during playing of records.	1. Friction between records on turntable and spindle.	1. Apply a thin coat of wax to spindle.
	2. No lubrication.	2. Clean and lubricate.
Record is not heard although changer operates.	1. Bad needle cartridge.	1. Replace.
	2. Broken leads in tone arm.	2. Replace cartridge leads.
Rumble, wow and microphonics during reproduction.	1. Changer not floated properly.	1. Remove packing strip and loosen mounting bolts (7). Motor leads pulled too tight.
	2. Impression on idler wheel (35A).	2. Replace idler wheel (35A).
	3. Bad motor shock mounts (48).	3. Replace shock mounts.
Needle fails to clear maximum load of records on turntable.	1. Tone arm out of adjustment.	1. Adjust tone arm height.
Tone arm sets down too far in or out on record.	1. Tone arm setdown out of adjustment.	1. Readjust tone arm setdown.
Tone arm setdown varies.	1. Tone arm pivots (14) loose.	1. Tighten pivots.
Changer continues to cycle.	1. Trip switch (79) out of adjustment.	1. Adjust trip switch.
	2. Trip pawl (78) sticks.	2. Clean and lubricate trip pawl.
Changer will not cycle upon completion of record.	1. No eccentric cycling groove on record.	1. No remedy.
	2. Trip mechanism sticks.	2. Clean trip mechanism and lubricate.
Friction lever fails to move with tone arm.	1. Felt washer (71) has improper friction surface.	1. If worn, replace. If not worn, lubricate.
Automatic shutoff fails to function.	1. Trip switch (79) not making contact.	1. Bend contacts so they make proper contact.
	2. Single-pole, double-throw switch (74) at bottom of pressure arm not making contact.	2. Adjust contacts.
	3. Electromagnet (109) has improper continuity and torque.	3. Replace.
	4. Transformer (T1) does not have correct voltage across primary and secondary.	4. Primary should have 117 volts AC and secondary should have 6.3 volts AC across them.
	5. Dirty contacts (74).	5. Clean switch contacts.
	6. Latch lever (111) may have burrs or worn spot on it.	6. File off burrs; if worn, replace.
	7. Pawl and link assembly (106) worn.	7. Replace.
	8. Pivot point of (111) binding.	8. Pivot point must swing freely when solenoid is activated.
	9. Too much tension on latch lever spring (104).	9. Replace spring.



CIRCUIT WIRING DIAGRAM FOR S-14067



CIRCUIT WIRING DIAGRAM FOR S-14086

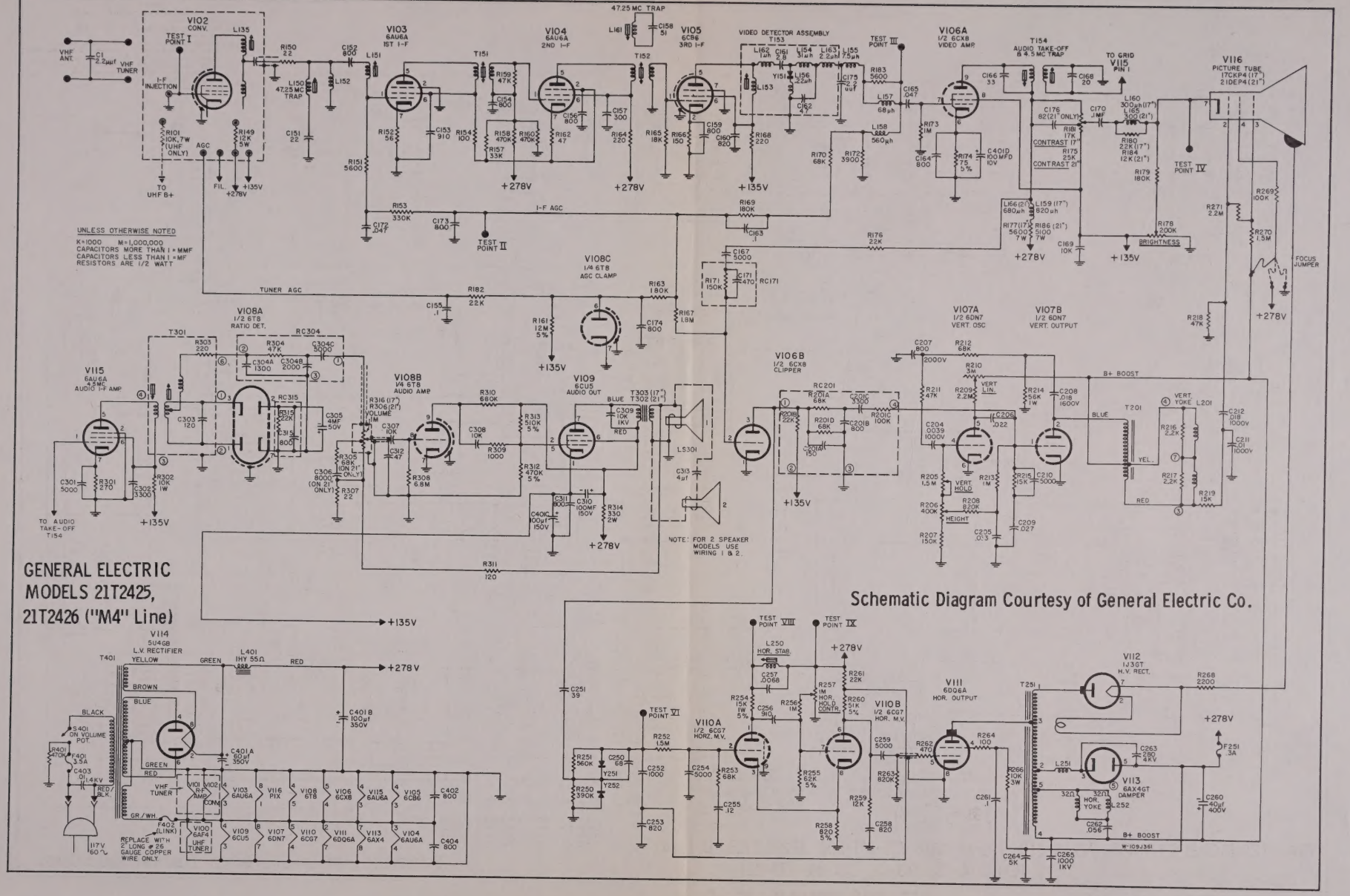
MECHANICAL PARTS LIST

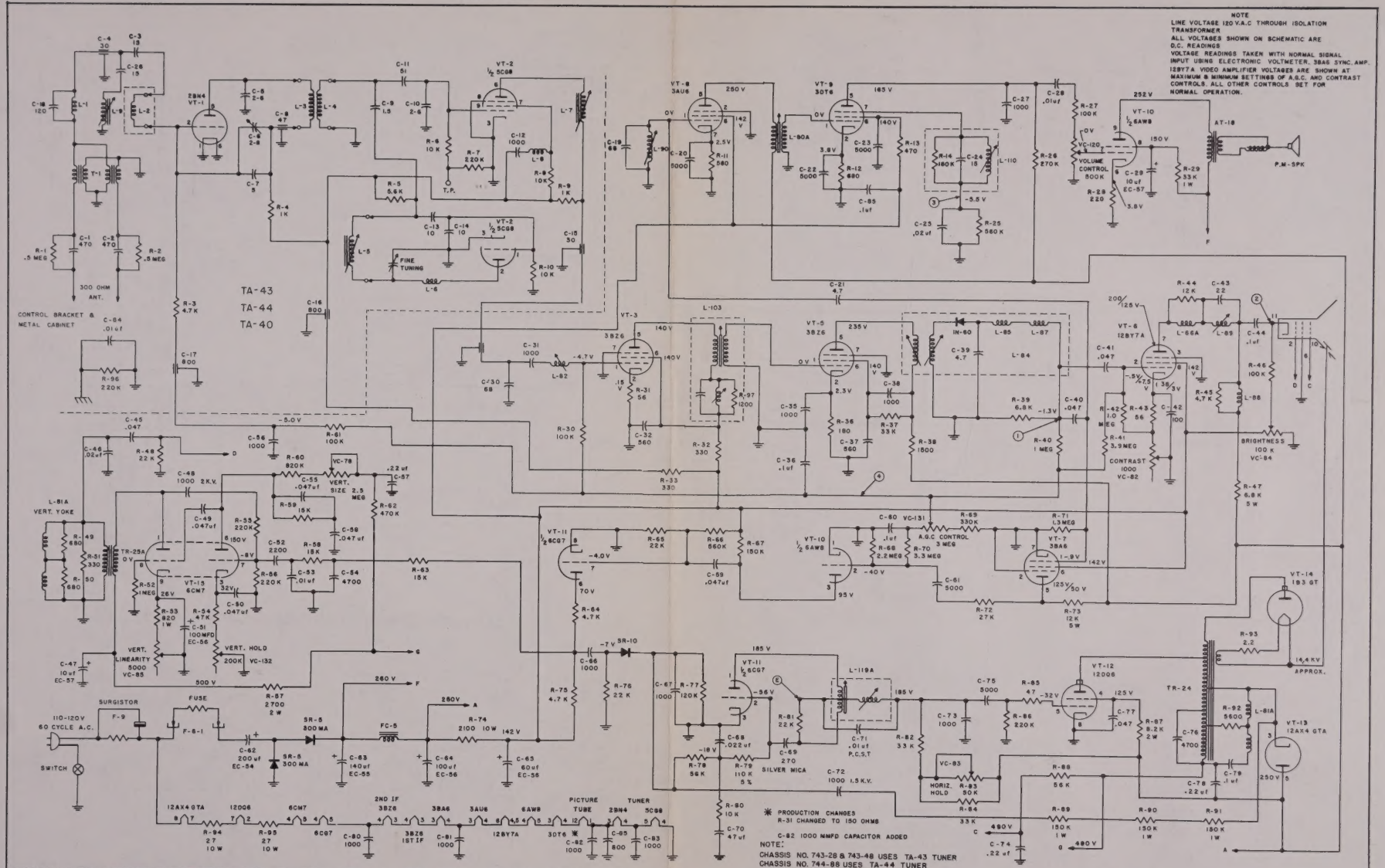
Ref. No.	Part No.	Description
1	S-42815	Pressure Arm and Shaft Assembly (A)
	S-19921	Pressure Arm and Shaft Assembly (B)
2	73-113	Pressure Arm Set Screws (2)
3	148-155	Cobra Tone Arm (A)
	148-147	Cobra Tone Arm (B)
4		"C" Washer
5	S-16986	Hinge Plate and Bracket
6	112-946	2-32 x 5/16" Rd. Hd. Self Tap Screws
7	112-809	Changer Mounting Bolts
8	69-301	6-32 x 3/4" Phillips Rd. Hd. Mach. Screw
9	56-241	Swivel Pivot Pin
10	57-2048	Tone Arm Mounting Plate (A)
	12-1477	Tone Arm Mounting Plate (B)
11	80-609	Landing Adjustment Spring
12	S-23652	Tone Arm Shaft Assembly
13	54-280	4-40 x 3/16" x 1/16" Hex Nut
14	73-121	Special Set Screw (2)
15	54-280	4-40 x 3/16" x 1/16" Hex Nut
16	80-645	Height Adjustment Spring
17	69-282	8-32 x 5/8" Phillips Rd. Hd. Screw
18	80-1024	Torsion Spring
19	135-16	Tone Arm Lift Pin Weight
20	54-141	Spring Nut, Tinnerman
21	84-77	Tone Arm Rest (A)
	84-74	Tone Arm Rest (B)
22		Washer (2)
23	6-64	Tone Arm Bearing
24	43-322	Plastic Housing (A)
	43-225	Plastic Housing (B)
25	46-1892	Reject Switch Button (A)
	46-1156	Reject Switch Button (B)
26		Baseplate
27	S-21380	Tone Arm Support Plate Assembly
28		Reject Switch
29	125-56	Rubber Grommet (3)
30	188-148	Retaining Ring (3)
31	S-19926	Spindle Assembly
32	142-76	Dual Pickup Cartridge (diamond-sapphire)
	142-77	Dual Pickup Cartridge (sapphire-sapphire)
33	S-42816	Turntable Assembly (A)
	S-21165	Turntable Assembly (B)
34	46-1890	On-Off Knob (A)
	46-1093	On-Off Knob (B)
35	S-23627	Idler Wheel and Bracket Assembly
35A	S-23622	Idler Wheel
36	93-53	1/32" x 11/64" x 3/8" Screw
37	188-149	"C" Washer
38		Lockwasher
39	S-16918	Oscillating Gear and Lever Assembly
40	34-172	Oscillating Gear
41	80-582	Trip Lever Spring
42	46-1891	Control Knob (A)
	46-1093	Control Knob (B)
43	188-164	Retaining Ring
44	S-19928	Strob. Disc Assembly (60-cycle)
45	46-1891	Control Knob (A)
	46-1093	Control Knob (B)
46	112-865	6-32 x 1" Bind Hd. Mach. Screw, Motor Mounting
47	93-1106	.031" x .144" x 1/2" Steel Washer (3)
48	125-91	Motor Mounting Grommet
49	117-210	On-Off Lever
50	S-16901	Speed Change Lever and Stud Assembly
51	112-862	4-24 x 5/16" Phillips Hd. Self Tap Screw
52	S-19930	Strob. Wheel Bracket Assembly
53	12-1989	Neon Bulb Bracket
54	80-948	Strob. Bracket Spring
55	S-19915	Setup Changer Lever and Stud Assembly
56	71-84	8-32 x 3/8" Flat Hd. Mach. Screw
57	S-17166	Brake Lever Assembly
58	80-809	Brake Spring
59	117-145	Tone Arm Lift Lever
60	S-16903	Tone Arm Lever and Stud Assembly
61	S-16900	Discriminator Lever and Stud Assembly
62	118-58	Setup Link
63	80-613	Tone Arm Lift Lever Spring
64		Changer Mounting Spring
65		Changer Retaining Clip
66	73-99	8-32 x 1/4" Slab Hd. Set Screw-Conepoint
67	S-16908	Tone Arm Lever and Bushing Assembly
68	S-17391	Tone Arm Link and Stud Assembly
69	80-813	Tone Arm Toggle Spring
70	S-16910	Friction Lever and Weight Assembly
71	93-1055	Felt Washer
72	94-723	Friction Lever Retaining Bushing
73		Mounting Screw
74	S-42825	Trip Switch Assembly
75	69-246	5-40 x 1/2" Rd. Hd. Mach. Screw
76	12-2510	Switch Bracket
77	80-582	Trip Lever Spring
78	S-15505	Trip Pawl Assembly
79	S-16933	Trip Switch Assembly
80	93-1070	Bearing Washer (2)
81	6-68	Spindle Bearing
82	S-16913	Gear Housing and Sleeve Assembly
83	S-16912	Clutch Gear Assembly
84	80-698	Gear Segment Pawl Spring
85	60-16	Gear Segment, Pawl
86		Part of Clutch Gear Assembly (Ref. No. 83)
87	188-147	Retaining Ring
88	80-871	Tone Arm Link Spring
89	188-149	Retaining Ring
90	80-814	Ejector Lever Spring
91	S-18117	Ejector Lever, Screw and Link Assembly
92	188-149	Retaining Ring
93	114-259	10-32 x 7/8" x 5/16" Hex Hd. Mach. Screw
94	93-365	1/32" x 13/64" x 3/8" Steel Washer
95	54-317	10-32 x 3/8" Square Nut
96	S-42824	Magnet Coil Assembly
97	32-29	Rubber Belt
98	61-186	Drive Wheel
99	S-42820	Drive Wheel Bracket, Bushing and Stud Assembly
100		Mounting Screw
101	12-2273	Pivot Bracket
102	12-2531	Bracket
103	166-102	Rubber Bumper
104	80-948	Strob. Bracket, Latch Lever Spring

Ref. No.	Part No.	Description
105	80-1193	Pivot Tension Spring
106	S-42823	Pawl and Link Assembly
107		Screw
108	12-2511	Mounting Bracket
109	S-42824	Magnet Coil Assembly
110	85-573	On-Off Switch

Ref. No.	Part No.	Description
111	117-211	Latch Lever
112	93-125	Lockwasher (3)
113	54-34	6-32 x 1/4" x 3/32" Hex Nut (3)
114	12-2274	Motor Mounting Bracket
115	141-156	Motor (A)
	141-140	Motor (B)

NOTE: Parts with letter (A) after them are used in Model S-14086.
Parts with letter (B) after them are used in Model S-14067.
Parts with no letter after them are used in both Models.


GENERAL ELECTRIC
MODELS 21T2425,
21T2426 ("M4" Line)
Schematic Diagram Courtesy of General Electric Co.
UNLESS OTHERWISE NOTED
K=1000 M=1,000,000
CAPACITORS MORE THAN 1 = MMF
CAPACITORS LESS THAN 1 = MF
RESISTORS ARE 1/2 WATT
NOTE: FOR 2 SPEAKER MODELS USE WIRING 1 & 2.
REPLACE WITH 2' LONG # 26 GAUGE COPPER WIRE ONLY.
47.25 MC TRAP
VIDEO DETECTOR ASSEMBLY T153
AUDIO TAKE-OFF & 4.5 MC TRAP T154
TO GRID V115 PIN 1
PICTURE TUBE 17CKP4 (17") 21DEP4 (21")
CONTRAST 17"
CONTRAST 21"
BRIGHTNESS
FOCUS JUMPER
TEST POINT I
TEST POINT II
TEST POINT III
TEST POINT IV
TEST POINT VI
TEST POINT VIII
TEST POINT IX
I-F AGC
TUNER AGC
B+ BOOST
VERT. HOLD
HEIGHT
VERT. LIN.
VERT. YOKE
HOR. YOKE
HOR. HOLD CONTR.
TO UHF B+
TO AUDIO TAKE-OFF T154
117V 60~
+135V
+278V
VHF ANT.
VHF TUNER
UHF TUNER
V102 CONV.
V103 6AU6A 1ST I-F
V104 6AU6A 2ND I-F
V105 6CB6 3RD I-F
V106A 1/2 6CX8 VIDEO AMP.
V106B 1/2 6CX8 CLIPPER
V107A 1/2 6DN7 VERT. OSC.
V107B 1/2 6DN7 VERT. OUTPUT
V108A 1/2 6T8 RATIO DET.
V108B 1/4 6T8 AUDIO AMP.
V108C 1/4 6T8 AGC CLAMP
V109 6CU5 AUDIO OUT
V110A 1/2 6CG7 HORZ. M.V.
V110B 1/2 6CG7 HOR. M.V.
V111 6DQ6A HOR. OUTPUT
V112 1J3GT H.V. RECT.
V113 6AX4GT DAMPER
V114 5U4GB L.V. RECTIFIER
V115 6AU6A 4.5MC AUDIO 1-F AMP.
V116 PICTURE TUBE
T301
T303 (17") T302 (21")
T401
L250 HOR. STAB.
T251
L401 1HY 55Ω
RC304
RC315
RC201
LS301



TRAV-LER MODELS 17MT65, 721-K-610, 721-LP-650, 721-MT-600, 1722, 1723, U, 1724
(CH. 740-78, 743-48, 744-88, 775-88)

Schematic Diagram Courtesy of Trav-Ler Radio Corp.